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Ladino /

was for many ages
It ~~has been~~ unfortunately
the
the practice to wrap up ~~all~~
science in the dead languages,
~~too~~ by which means the
knowledge of them was confined
exclusively to the members of
the learned profession. After
the revival of letters by means
of the reformation and the
art of printing, the sciences
were emancipated from the
dead languages, but they
^{so much} were enveloped in obscurity
and ~~very~~ technical terms
as to be intelligible only

However strange it may
seem, I ~~am~~ maintain
there is not a truth in
medicine that is worth
knowing, or capable of be-
ing applied to the cure of
diseases, but may be com-
prehended by a lady, as
easily as by a gentleman,
and when we consider how
much more ^{the} charge ^{of} the health
and lives of a family is
committed to its ^{mother} ~~female~~,
than to its ^{fathers} ~~male~~ head, it
must be admitted that

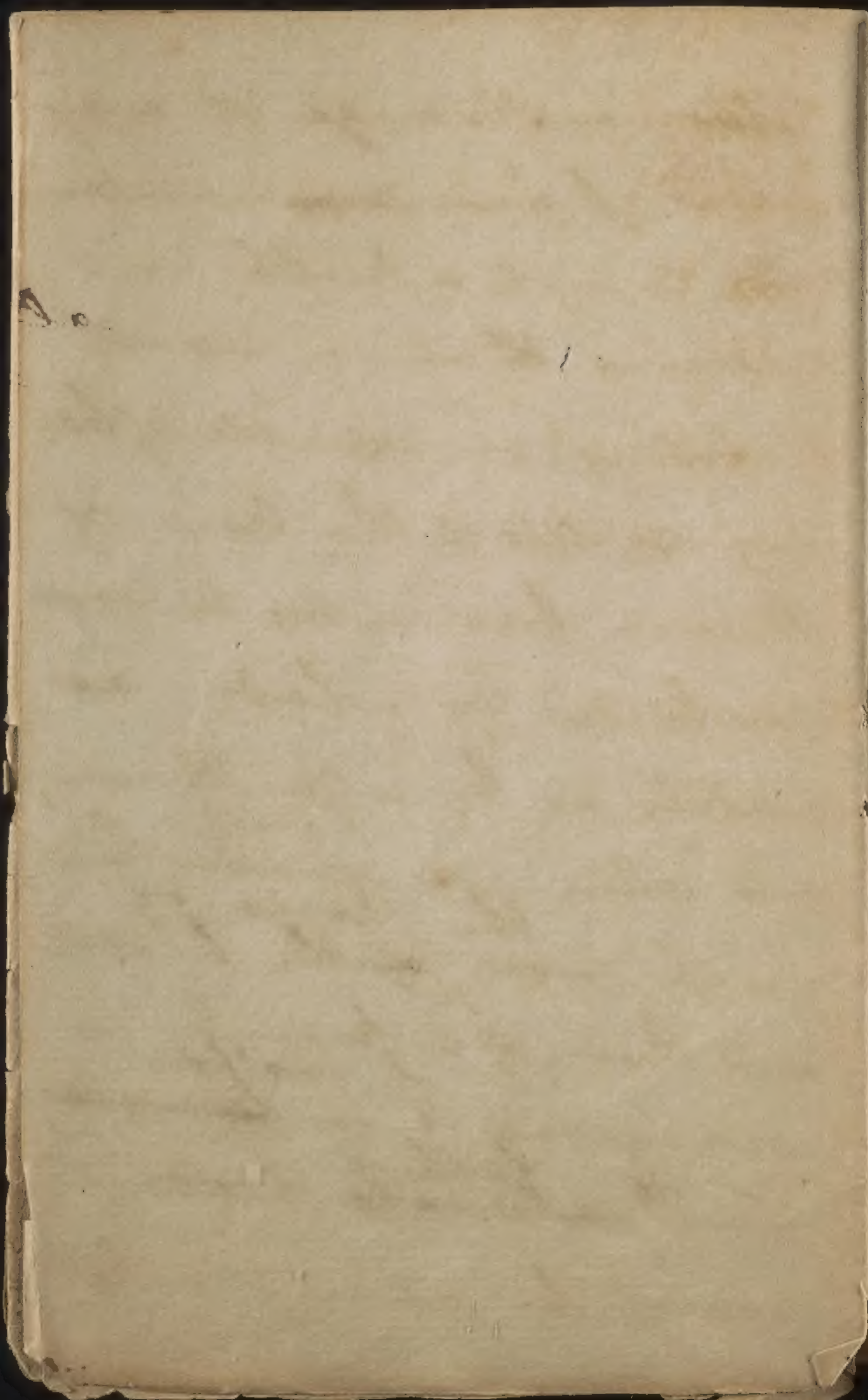
to
~~by~~ gentlemen. Of late years,
pains have been taken to
render them intelligible to
ladies and even to young
people. The science of medicine
in a particular manner
has undergone a partial
revolution ~~from the labors~~
~~of~~ in this respect, ~~and hence~~
~~we find~~ but much
remains yet to be done
to ~~render~~ ~~it~~ accommodate
it to the ^{female mind.} ~~state of education~~
~~and~~ The design of the following
~~lectures is not so much~~

parts of them as will
~~be~~ I hope be perfectly
intelligible. ~~The~~ I begin
by remarking that Animal
life as applied to the
human body consists
in 3 things viz:

In order to enable us to
understand our subject it
will be necessary to pre-
mise 3 propositions.

April 16. 1801.

However strange it may
seem, I ~~am~~ maintain
there is not a truth in
medicine that is worth
knowing, or capable of be-
ing applied to the cure of
diseases, but may be com-
prehended by a lady, as
easily as by a gentleman,
and when we consider ^{further} how
much more ^{the} charge ^{of} the health
and lives of a family is
committed to its ^{mother} ~~females~~,
than to its ^{fathers} ~~male~~ heads it
must be admitted that



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some instruction in the
Animal Economy, and
in the principles of medicine
should form an essential
part of ~~this~~ the education
of every woman ~~is~~ who
expects to be the mistress
of a family. Besides ^{watching} ~~taking~~
^{over} ~~care~~ of the health & lives
of her own children & servants,
she will be enabled to act
the part of a Lady Bountiful

by administering medicines
& advice to her ^{poor} neighbours
who were unable to obtain
the assistance of a physician.

The lectures which I am about
to deliver, are not intended to

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as a system of instruction in
medicine. Far very far from
it. They will consist of a
selection of such subjects
as are most practical &
useful, and such as will
lay a foundation for your
^{future}
~~improving yourselves by~~
acquisitions of medical knowledge,
by reading & observation.

The first object of our inquiries
shall be one which is
deeply interesting, ~~too~~ to us
all, and that is the presence
of life. prolonging ~~To this end~~ to
~~prolong~~ this invaluable be-
ing, is the business of the

[Faint, illegible handwriting on a single page of aged paper.]

[Faint, illegible handwriting on the right edge of the page, possibly from the reverse side or an adjacent page.]

Leading Art; and in order
to do this, with effect
it is necessary to know in
what life consists, and
what are the means esta-
-blished by the Creator for
maintaining it for 50,
60, & even an 100 years,
under the many circumstances
which oppose & threaten its
extinction. The history of
these means shall be the bu-
-siness of our present lecture.

— They are contained in a
~~small~~ pamphlet, which
I published a few years ago
at the request of my pupils.
— I shall read to you such

[Faint, illegible handwriting on a blank page]

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young ladies had ^{the} pleasure of
The last time I ~~was~~ addressing
some of you, I endeavoured
to show you the folly and
impropriety of acquiring
such accomplishments as
were not accommodated
to the present state of society
- manners & government
of the United States. - To
supply the place of these
accomplishments, I beg
leave to offer to your atten-
-tion a few plain and
simple remarks upon
such parts of natural

Philosophy & Chemistry
as are applicable to
Domestic & ^{or kitchen} culinary
purposes. This kind of
knowledge will be useful
to you in a variety of
ways. It will excite a
taste for such books as
treat more fully upon
these subjects, & raise you
above the necessity of stooping
to novels & romances for
entertainment.

2 It will furnish you
with subjects for rational
& improving conversation
& thereby preserve you
from dishonouring your
understandings & wasting
your time by deriving all
your conversation from
the dress - fashions - or
scandal.

3 It will ^{cause} ~~make~~ your
society to be sought for
& courted by sensible

men, & ~~make~~ be the
means of banishing
fools - & Coxcombs from
your company. -

4 It will afford you ~~some~~
~~pleasure~~
~~is~~ in solitude, and
render you independent
of public amusements
for your happiness.

5 This kind of knowledge
will make you useful
to your parents while
you remain in sub-

ordination to them &

6th ^{teach you frugality} It will qualify you
& economy & thereby
to shine as wives &

mothers - & mistresses

of families when it

shall please God to call

you to fill these vici-

-portant female stations to-

Definition of Chemistry:

try -

Heat & mixture two

powerful & universal

agents in nature & art.

we see them every where.
Rain - earthquakes -
meteors &c - mistime.
in all arts. Baker. flour
& yeast & water - brewer
malt - hops - water -
Brewer's fermenter - Copper & Line
&c - of Heat - all from
derived from the sun -
lodged in all bodies - excited
by percussion - flint &
Steel.
2 by attrition - ~~friction~~ ^{friction}
wheels - two Pichos by the

Indians.

3 Fermentation - hay

Sticks -

4 Mixture - lime & water

Ships caught a fire by it

or by it

5 Accip of Air - in what is

called phosphorus. -

6 Collected rays of the sun

in a burning glass. -

of the application of a burning body.

One or two lanes of

heat

2 & 12 Its passage thro' soft

& spongy bodies more

slowly than denser bodies.

hence broken garments
warmer y^d linen or
silk - hence feather
beds warmest covering
- hence eider down coverlets
so useful. - hence snow
keeps the ground warm
- as in Canada - verdure
early in the Spring - retains
y^e heat of the earth. hence
the wool of sheep in cold coun-
tries - becomes hair in
warm - - hence fur houses
& cur papers show by this white
bores - hence the use of white

gets to elevates in summer
& of grey or white hairs in cold
13 low. Equilibrium of

heat - Lakes - seas - heat

rises & warms $\frac{1}{2}$ air around

& of orchards not freezing

near rivers in the Spring

of the year. — Thawing of

apples - & other vegetables -

~~lifting of the weight of ice.~~

Reason of damp air being so cold in
winter & hot & disagreeable in summer

4 Heat ascends in the highest

part of a room the warmest.

Taylor's in Germany: set high -

the French sleep high - ascend on

cold comes in below - & heat

climbs to beds - floor cold -

goes out at the same time

above illustrated by a candle

Air like heat tends to Equilibrium

5 Air heated by reflection - coldness

of summits of mountains - Bal-
cons - Lect: 2nd

Effects of heat

Expansion - all bodies
expand th heat, & contract
th cold except ice. -

Air - in a bladder ^{most rare}
& in summer - is ^{very} light
& in a thermometer

Iron in bolts - brass &c in
clothes &c. - wood for cracks

from water expanding with
heat spits fire - explosion of red when
heat ^{ref iron on spittle} - the
water expands & ~~is~~
turned into ice

~~cold~~ - hence ice breaks bottles -
bursts conduit pipes -

- hence its use in crumpling

the ground - hence its effects

in crumpling houses - &c

See suddenly ~~burst~~ The swelling
of the globe at the equator by heat -

3rd.

2 Humidity - all bodies are

capable of it by heat - water
fluid only from heat - be-
comes ice by ^{the} absence of it.
ice at 32°: fire necessary at 62°

3 Evaporation all bodies

capable of it ^{the Rain by it -} by heat. Its effects
to produce cold - ^{hence} ~~hence~~

new washed rooms cool, & to

sickly people dangerous - hence

sweating cools people. remarks
120° - is kept at 96°

The colder the surface of more

evaporation - & removing

excess of matter increases it.

hence windy days dry the
roads - hence windy days

ful coldest - remove per:
- spiration - & give access to
cold air to come in contact
with the body. - great force
as in steam engines -

A flame - fresh
it. Δ y cause of flame -
the same in all bodies - may
be common - Air becomes
impure by it - is said to
be phlogistigated - kills ani:
as clay -
imals - & extinguishes a candle
& mineral

The moving form of flame
owing to the action of air on
it - Soot - owing to immu:
- plate consumption of vegeta:
- ble matter - The more perfect

of consumption - the lungs
Lungs ^{as pneumonia} - ~~However~~ if it is inflam-
mation - or only burnt wood
we infer from ^{the} taking fire
in chimneys -

Effects of heat on Vegetables
- hide retreat when he retreats
& divorces themselves of all their
flowers - leaves &c - on animals
begins it in chishens - as
in Egypt - continues it as in
many insects - when ~~heat~~ ^{it is}
withdrawn - they become
torpid - and are revived only
by ^{the} return of its cheering
influence. Happily proportioned -

Too much would expand
all fluids - rivers overflow
y^e banks - solid bodies as earth
be melted - Too little - all nature
be trilled in icy chains,
& our globe present y^e awful
phenom: of another chaos.

Lect: 3

on Mixture

1 solution - 2 mixture
3 diffusion - 1st cold - 2nd heat
1st many bodies 2 only two
can be united. Eg: Saline & V.
& O₂ & V.

Decomposition - add Sal^t
or Sp^l Sal^t - to a solution of
marble in O₂ & V. called
Electric attraction - universal -
same nature - tables -

Salts
as (Ox Ox Ox) native - Offm:
Acids - mineral - Veg: animal

marbles Sy² of Violets red

2 kinds

Alkalies - Sy² of Violets - green

~~Properties~~
effervesces w acids - cause

Elect. Attraction - fixed air

separated - weights $\frac{1}{4}$ & 9:

Alkali 3fs - O & W: balanced

then mix the two & weigh y:

mixtⁿ w air - corrosive w it -

burns y skin & 4th

Neutral salts

mixture of Acid & Alkali

Kitchen Salt - Salt Petre

Glauber Salt. -

extensive use in com: life.

com: salt - from springs -
none near $\frac{1}{2}$ ocean. why? -

2 Rocks - ^{crystals} - 3: Sea - why

Salt - I preserve from putref.

2 is more brisant - is more

Salt between tropics & tow.

North & South poles. - How
cause

Obt? ? + By heat of sun -

as at Cape Verde Islands. 2nd

from boiling as Eng^d & France. X

3 By freezing - y^e ice fresh -
+ How refined - ^{is first diff.} ~~ox.~~ blood & coagulats
^{degre} Nitre from sweatings of

cellars - Barms - bridge

houses. - ^{addition of ley - it separates} good house wines
earth & whites with ox. -
shd. know this -

Proverbs - Vinegar & Nitre

Earths

They are 1 calcareous or
lime - marble - Chalk - a
great body - esp^{ci} two first
in Pennsy: - Chalk in In:
- glauco - white Cliffs of Lebanon.
Fire ~~to~~ ^{discharges fixed} air
effervesce with Acids - & fixed
Air discharged -

2 Gypsums - as plaster of
Paris - Sand -

3 flinty - as ~~stones~~ - up
to precious stones. Jewels
are worth 100000 in the
crown in y^e tower. One their
variety of color to metallic

Matter - as if? ones - paste
buckets. melt w: ^{miniature} Alkalies &
bridge glass.

~~Diff~~ Earths & fire will not
act on - as firing glass - &

Asbestos - called Salamander
Stone - burn w: th cotton - ^{resist fire} Egypt.
brown & white.
- and many y dead in ⁱⁿ glass.

gemments made of y: Dr
Franklin's Story

5 Clays. - Variety of color
to metallic matter. Fire makes
them white - alum what? Exp?
decompose it by alkali - miniature
all Earths - ^{with flint} diff^r arrang^d
of them - China -
owing to the deluge -

Leat: 5th
on Inflammables
1 Jewel of all kinds - as sea

Kamel coal in particular
or fossil coal - charcoal - ~~wood~~
heat - or ^{the} ~~wood~~ ^{roots of vegetables}
containing Δ - wood.

2 Oils - Aromatic & Unctuous -

Sp^t. of Temperature & Animal

& Veget. - Butter - Sweet oil -

former - fat - bears grease &

Heat makes ^{the} ~~various~~ ^{contain}
mixture of ~~it~~ - how ~~modified~~

3 Δ equal parts of Δ & Θ ^{in all}

origin - bowels of ^{the} earth - ~~but~~

metals - catches fire there - water breaks

in - Steam & fixed air cause of ^{the} ~~it~~

earthquakes. ^{Altho' unites with}
~~heat~~ ^{gold} ~~by~~ ^{distillation & re.}

4 Sp^t of Wine - composed of Δ - out

acid & fine oil - Other made

of ~~oil & acid~~ Δ & Θ - is a fine

Oil - Exp^t - mill dams.

5 Resins & amber. - Δ

Dissolve in
varnishes

6 Phosphorus - acid & Δ -
mition - light wood - fire fly
beam - Artif^d Gr Boerhaave's
Story. -

We wish our Names are herewith an-
-nected agree to pay to the Treasurer of
the Humane Society an annual con-
-tribution of one Dollar towards sup-
-porting the benevolent designs of
said Institution -

Lect: 6 - Octob^r 23rd -

on metals

Divided into metals - and
ferrimetals - 1st malleable
as lead - 2nd not as γ .

- Metals contain ~~imp~~ Δ -
the extraction of it by fire
or acids makes γ ^m Drops -
called Calcination. The resto-
-ration of it called reduction.

E.g. in lead - grease restores
it. why that's wonderful γ
our bodies sh^d be raised at
the last day. The soul li^g
~~as~~ as it were its Δ - when

Separated by death - the body
becomes like a calf of metal -
falls into a powder - but by
~~the~~ its reunion of the soul it again
assumes its ancient form.

Gold

The heaviest of all metals - the
purest - least liable to be
affected by fire - air &c - hence
most useful for coin. Ancient
& universal. 2 for buttons -
the watches & a very durable.
persons most careful of y:
3 for gilding - capable of exten-
sion & in wire & leaf almost

beyond conception. precious
furniture. loses its color
in the light dark - light the
cause of color in plants - the
color of gold delightful to the
eye - next to green - w: the
grandeur of $\frac{1}{2}$ city of new
Jerusalem ~~is~~ ^{where} walls
are to be 1500 miles high, &
all of ^{displays in Regia -} pure gold. found in
all parts of the world. Brazil
silver

next to gold in all its proper-
ties & uses. hereafter in
plate. found in Mexico
& Spanish dominions.
Twenty million of dollars
made here annually.

The Spaniards say - hence
of money drawn from them
to all parts of the World. Disposed
in making lunar caustic - when
diluted stains ~~from~~
of hair black ~~from~~
most useful - ~~great~~ destructive

~~First used for making weapons~~
of death. Implements of human
- Dry from it - Artificers tool of
all kinds. - Surgeons instrument.

- Commonly called - the a
great blessing to the world. I wish
was not forced to ^{early}
I ~~could~~ add - employed in

war, ~~as~~ in making instrument
of death - ^{this not always the} But ~~let us~~ ^{we} look
by the case
from to the time when swords

shall be turned into plough
shares, & sheaves into pruning
hooks, & nations learn war
no more. — ~~find all~~

Iron melted by heat — in
casting pots — the heat immense.
Scum of carbon from works in
Scotland. — ^{all} acids act on it
green & itriol — what? — water
acts on it — & corrodes it — rust
what? — Tinct of steel. L.G.
Astringent vegetables — & from
dark color —

Found every where — diffused
in animals & vegetables — even
in honey. —

Copper

all acids act on it

Heat melts it - D7 Blue Vitriol
or blue stone - a corrosive
alkalies too I p Sal ammon.

on a solution of it - beautiful
veg: ind - Verdigrise - arsenic
blue - Copper & Zinc - Brass
makes it white -
Ringing bells & church bells - Bells
- telescopes & microscopes - common
copper & tin. add

Easily melted & calcined.

All acids, especially vegetable
becomes sweet -
act on it - Sugar of lead - white
Printer's types - Lead & Z
Lead Acetate & lead. printer

made of lead & Zinc.

Zinc plates iron - in solution
of D^o - not acted on by veg: acids. used

admixture D7 & Z. white

Vitriol - found in Calamint.

4
7

Dissolves in all acids - in
O7 Calomel. -

not in Water - no Vermifuge
mixed wth tin foil - makes
looking glasses. - gildens
brass - unites wth softened O
- takes off gold rings. -

Leet 7th
on Waters

One simple water - all
different from foreign matters.
These visible - or invisible.
~~The finest water - rain~~
- 1 pollen - red sand - 3 red
animals as in South Sea - 4
green - from vegetables - and

foul air from stagnating water -
good out of evil -

Invisible - Salts - common
Salt detected by Lunar Caustic.

Earths - calcareous

metals - chiefly iron -

known by astring² vegetables

E.g.:

fixed Air - Pyrmont water -

~~Best~~ Rain - ^{lightest &} Snow ^{purest}
water - best for boiling vegetables
- next river - Creos.
Soft - known by soluble - Hydro-
springs - Mineral - Large
stagnant water -

Stagnating dissolves foreign

matter - pure water of

New Jerusalem - clear as
crystal proceeding out the

will contribute to health
& pleasure -

Airs

1 Common - 1 gallon in 1
minute - 15 pounds on a square
inch ^{above} - 30,000 of a middle sized man

how exist? - internal air resists
it 50 miles high - Hygrom: & density:
Barom: might or pure

2 Dephlogisticated Air - $\frac{1}{4}$ or $\frac{1}{5}$

of common air - abounds

is secreted from vegetables.

abounds in
~~in the atmosphere~~ - stored

Lead - 2 to in Saltpetre - being

is the cause of red color in red
lead, or wafers - imparts red
color to hams - & do to the
blood. The more of this air
^{Animals live}
y pure - 5 times as long in
it as in common - hence the
refinement of vegetables near a
house - is exhilarating - see
Milton ^{Asphodelian air - pure}
no fogs - exhalations - hence longevity -
means new atmosphere -
probably all Dep^d air
often called so - It will contribute
like y pure ~~air~~ water, to health
& pleasure of the inhabitants
of the new Jerusalem.

of vegetables -

Light - cause of color - ~~long~~

Diversity of color & diffⁿ of quan:
-ities of light - sun cause of
circulation of saps - turn to
it - grow most towards it -
Indians etc. - Thorn bush in
a garden loses its thorns -

21.1.12

Lect: 8th

Having finished general principles
- we come to application.

Considering how much duty &
necessity conspire to confine a
lady to her house - its conveniences
of great consequence.

1 Direction - South & North -

East & West from Europe esp^d.

North walls hardest to pull

Britain - coldest in summer &
Down

warmest in winter. Entry - win-
dows down opposite to each other.

2 Materials - Logs - boards -

Stone - bricks - mud - called in

marble - most wholesome
England Cobs - which best? -

wood - in this country - absorb

internal moisture - Stone
rust - absorb 20 - hence heavier
when wet - than dry - Bricks
when plastered moisture ² when
not - Mud - or Cobs 2 feet thick
excellent - absorb. The

3 Bricks direction - large rooms
- in winter - draught less felt
- in summer less collection of
heat - windows open above
& below -
in summer - closed in winter -
- Some houses windows not oppo-
site - sh^d be a thoroughfare
- a ventilator - what²
- warmth increased by ^{thick} carpets & low ceiling

x By night - blanket under y sheet - bed covering
curtains - not too close.

Form of y fire place - fireplace -
-ting - small - iron benches &
sides - closets at a distance
from fire - or kept open. -

Screens - raising the feet above
the floor - setting high. Ashes
in the hearth. ~~By night - not so far from~~
~~coolness promoted by 2 thick walls~~
from y roof -
on a double wall - Sheds - trees

from shade & evaporation which
produces cold - ^{Situation - height -} ~~Chimney all round~~
as summer houses & keeping
windows & shutters close while
y sun shines on them. ⁴ a floor

of earth - bricks - or marble -
^{which should be kept open}

5 Sitting near a Chimney
- circulation of air from y downwards
6 high ceiling. ⁷ cools & keeps neat
8 from y upwards in summer
y ~~trans~~ chair.

By night - ^{large & single beds warm} mattresses & leather - a room
with a chimney - not windows open

2 Fire places - small &c. - Stoves
clay - Brick - iron -
open - & close - the first called

Franklin's & Rittenhouses. -

The 2nd close - various - tinplate

for baking - boiling - The longer
the funnel - & less soot - more
heat - Economy - wealth of
spare and from them.

5 Smoky Chimneys - disagreeable
inflame [&] eyes - stain furniture
& Walls - darken [&] complexion.
& lastly hurt the temper.

Heavy - Smoke 'dont ascend
by its weight - is driven up
by raref. air - what?

London smoke - &c. form of
funnel - nothing to do wth: drawing
- no drawing - smoke driven up
by surrounding air. th
Lect: 9:

1 Too tight room - no current
of air - common in new houses
small or well as great rooms
- cured by letting in air above
- a ventilator or was is done.

^{or funnel}
2 Too large fire place - ^{rare} Air
does not fill ^{the} whole of them -
hence they fall - upper rooms
small - lower ones larger.

contract fire place by means

3 Short funnel & ^{contract} ~~open~~ it

4 Two chimneys attracting

from each other - ^{avoid} ~~avoid~~ them.

5 tops of houses or a hill
- a turncap covering above &
on 3 sides - & raising y chimney

6 Inconvenient situation
of doors - pressing air too
suddenly - blows it out as

Smoke from above -

a slider ^{sweeping chimneys}
glazing w salt - ^{stroke not boys} extinction of fire
opportunity at right ^{with salt}
Vallets - always equal ^{anyway}

ture - proper to keep things from

heat & cold - ^{the} killers w chimneys

keeps vitnals from moulding
by promoting circulation of

Air.

wood preserved by drying, &c

then painting - direction in which
wood has grown - posts - burning ^{ends} of
of beams or covering them wth
resin - before they are put into a
house - walls preserved by plastering
- weather boarding -

washing - white washing -
Ventilators.
opening windows - removing offal
matters - especially vegetables
Hort of potatoes in Portobello
when putrid &c - Stables not in-
jurious near a house - but whole
some - - ~~commonly safe~~

: Some - - ~~Commons I find~~
 Useful - Doubtless - when applied
 I wish to do this - I wish to
 Insects - ~~that I wish to do~~
 I know not ~~you may say~~ but to
 ring - as ~~part of~~ in ~~the~~ raising
 2 exercise ~~patience~~ - ~~standing~~ ~~no~~
~~location~~

monuments of the fall of man.
tell us if we have forfeited
our right to ^{the} earth, & that while

we are in this world, we are
in an enemy's country.

from rain water
flies & mosquitoes - covering

▽ - or a fish prevents ^{on} y:

- flies besides useful in the
^{three} ~~two~~ ways mentioned - afford
food to singing birds - & consume
insupportable matter.

would to destroy them on the
principles of war - by molasses
on a board & gunpowder - by

fly stone in water - a poison -
by avoiding ^{fruit} trees near a house

Dark rooms - driving y out by
Bugs - & - ^{on} ~~permeant~~ hot salt water

^{permeant the water} Rats & mice - ~~all~~ Besides

former uses of insects, they

hint to us to repair our
houses found only in old ones.

Destroyed - 1 by traps. 2 Cats - ^{deadest} not
to be fed. - or if ~~human~~ 3 by arsenic
or ratsbane - wrong - dangerous
to children - & rats when they die
in their holes taint a house.

If humanity revolts as yesterday
at either of these & a Bill, or 5
shaving, or cutting the hair. terrifies
them away. -

Lightning & Thunder & some
~~light~~
when near no perception of
time between ⁱⁿ y: & some of
Electricity ^{plus & minus} - or Equilib.
- ^{or} conducted by
Metals. & not by glass.

hence if use of iron conductors
draw it silently into y^e earth.

Sharp points best. Sir George
& Dr Franklin's story.

Mr Patterson at the College.
where no rod - avoid being
near a Chimney - Window
or door - middle of room -
avoid trees - see Bontas how
they act.

Kitchens - ~~Best of lights~~ For then they are.
- aptables of dirt & is worth
Dice. To prevent both murther
Boneret's proposition - In
large families - & in the present
State of civilized Society in =

possible. ~~It is~~ ^{out} ~~be ought to~~
~~light~~ ~~at~~ ~~of~~ dirt - out of light
- if vice. - out of hearing -
best in town -
under ground - under par:
- cover - Rushes - or straw pre:
vents passage of sound. - ~~It~~
or bad mannerly
receptacles of dirt & vice - best
of keep children out of them.

~~But~~ They increase both. Vice
in a particular manner
vice knowledge is increased by
being propagated. But if ~~it~~ ^{is}
there no way of prevent this
Dirt or vice - ^{to our poverty, &} are our law:
to be abandoned to destruction
& ruin? no - ~~the~~ our law:
to use the words of L^d Chester.

we are unfortunate friends
or the words of our Saviour -
our "brethren". There is one
& but one method of preven-
ting the Disorders of a Kitchen
the presence of a Mistress.

Master's Eye - Drest of fingers
feet - the ~~eyes~~ eyes - ears &
tongue of a Mistress
in her Kitchen a remedy for
all disorders - I'd visit it two
or three times a day - it is in-
conceivable ² in a woman
serves by it - & after all - a
man loves ² a woman most
whose affection for himself he
feels every time he sets down

to a meal, or puts his
hand in his pocket. Not
incompatible th rational
duties of life - tends to ^{defend} ~~make~~
liberal & extensive knowledge
from Censure. Solomon's wife
husband no need of spoil why? best
well of acquiring confidence & influence over
kitchens th have over -
a husband.

Extensive Irish heath - pump -
- with horse man it, wash
house.

^{Deep -}
Ice house - straw - hay -

^{woollen}
Deep - preserved by tobacco
Cedar shavings - Alopecia -

Cumpher - Celler in a chest.

Cumpher also by wrapping between
linen. Grease by chalk & hot iron - and
~~by turpentine - how?~~
Hempstains by Iron mauls - 57 lbs
~~by turpentine - how?~~
vine & salt steam.

Ink-dyeing - the
rest: 10th

~~weave - accommodates to~~

~~fabrics~~ - woollen & cotton

most healthy - dinner 1p30 -

more apt when old to become

putrid ^{the} the exhalation from

the skin. Silk - ~~where~~ ~~be~~ ^{be} becom.

very in the use of it - durable - all

China clad in it - when old &

worn - may be carded & spun

over again. ^{very} error - abt.
changing linen. -

Plate - durable - insoluble -

fragile - plated ware on iron -

tin - or copper - may be suited

to fashion.

Copper - & brass Vapors acted

on by acids - Symples - Alkalies.

Access of air necessary - bottom

leptouched - Tin safest - has
Arsenic - powder of tin & Zinc
safe - mugs & plates - Economy
in the latter saves knives - and
cloaths - tho' old fashioned. -

Iron safe - Durable - tho' acids
& even water act on it - no
injury from it - teapots best
except plate - pots best -

of China - is composed of -
Enamel - safe

Glass - is made of - white glass
of lead - curves in ~~what~~ wine
glass how made - safe no
solvent in chemistry acts on
it.

Earthen Ware - Stone. Green's

Delf - to enamelware - glazed
by ~~lead~~ calx of lead diffused in
water & melted - vitrifies [&] clay.

- dangerous for acids - dissolve
lead. -

looking glasses - tin foil &c.

L - Pictures - crayons - oils -
linings - wood & glass - metals. -
~~prints~~ ^{prints} of mezzotints - engraving
& etching -

Breasts - plaster of paris
burnt - & cast - Baso relievo,
& Alto relievo. -

Beds - chests - sh^d be well
aired - daily to discharge
respiration - is filled wth
pleuristiated air & g^{as} a candle.

ed
in
y.
2

washing - rapid delicate colors

Bleaching - Sun - & Alkali or

potash -

Ironing - smooth - caution

not to put hands in cold ∇ .

Soap - Oil - or fat & Alkali

from ashes - hardened by

Salt - how - Venice & Castile

of Olive Oil & soap alk: col'd by

but - ^{2. units} fermented juice

Starch - of wheat & potatoes -

washed & strained & washed -

Blue - to prevent yellow -

Dyes - 1 beautiful - like the

works of nature - preserves

many things - like paint.

Colors - what? Vibron.

Prison - Different brown

2.

Vegetables - metallic and
earthy salts -

Clocks - & Sacks - Boxes of
much ^{power} - I increase the
powers of man, & lighten labor.
- move by weights & springs -
or smoke -

Lamps - new fashioned burners
Smoke - Candles - Spermaceti
- tallow - Bees & myrtle Wax.
^{& toe}
Cotton Wicks twisted best.

Pans - boiling grills in ashes -
consumes their Oil.

Ink - black - how made -
^{Figur} - & Clavis -
pigments - used in China - not
so good as ink -

Sympathetic - See Sat: and
Osmium dissolved in lime water
or liquor A. vis

Paper - from 2 ago -
Booth - printing office.

Thomson & Barron^{rs}. See y:
nursery in a house. Sept:
the latter predict changes in
the weather.

Means of preserving beauty
Depend on teeth - &
Beauty - shape - complexion
- & teeth - line of beauty w: ?
Shape promoted
By loose dress - erect pos:

Posture of body & head - separate
teeth - not close or separate - draw decayed ones
& keep filling gaps after
3. Complexion - 1 depends from
the morning - night cap -
the sun. 2 Moisture - air in

Britain & Ireland - ditto here
frequent washing the face
& hands, esp^y in rain or
snow water Job. "If I wash
myself with water & make
~~myself~~ my hands never so clean"

Job xx. 30 -
3 good health - depends on
moderate exercise & early
country air - air of hills - Scotch
rising & avoiding late parties.
Ladies -

- 4 moderate animal food not
too high seasoned 5 light perfume
on y^e head of Dress. Above all avoid
Cosmetics - injure health &
give a yellow color - made of
pyrites - Perfumes - substitutes
for cleanliness - best - no smell best
6 innocence - purity of mind
& knowledge - ignorance has
been called y^e curse of God - gives
a vacant eye, & face.

Dr young

"Beauties of soul irradiate &c

Lect. 11:th -

of Aliments

we shall begin by enquiring
into the final cause or reasons
of the frequent returns of appetite.

- why sh^d so much time be emp-
loyed in this animal gratification?

- why were we not so formed as
that ^{plentiful} ~~one~~ ~~meal~~ ~~in~~

~~one~~ sh^d not be sufficient to
support our bodies for a week - a
month - or even a year? - Two

reasons may probably be given

~~for~~ why this is not the case,

& why we are so dependant
upon the elements that support

our bodies, as to require two
or three meals a day to support
them. -

It is essential to our happi-
-ness that we sh^d. retain a con-
-stant sense of our creator
upon our minds. ~~Therefore~~
~~we~~ To preserve this sense
at all times, our maker has
kindly ~~rendered us~~ ^{rendered us} dependant
upon his bounty, & has, by
the regular & daily returns
of our appetites, implanted
a monitor in our bodies to
prevent our forgetting him,
& to remind us of the

Obligations of gratitude, and
obedience which we owe to
his goodness. — The language,
then ⁱⁿ every meal we set
down is, — "When this you
see" — Remember me"

2 A second use in ^{the} frequent
return of our appetites is,
they serve to promote conver-
sation ~~by~~ & thereby to increase
knowledge & social happiness,
by bringing the members of
a family — friends — and
even strangers ^{more frequently} together for
the ^{company} purposes of eating, and
drinking.

I cannot help remarking
a further instance of the divine
goodness in connecting so much
pleasure th in the employments
of eating & drinking. Had this
satisfaction
~~been~~ been left to reason,
~~to~~ or to instruction, how
often w^d? pleasure - business
or indolence have rendered us
dead to the necessities of our
bodies - and how often would
a perverse temper in a child
have been the cause of its
death - for if ^{this} ^{was} a child ~~th~~
not ~~be~~ ^{to eat} impelled by the
pleasure it derived from
eating, it would be end

difficult to compel it to
eat, as it is to make it learn
its book. —

There is the same ~~connection~~ ^{relation}
between different elements of
there is between diff^t notes in
music, — ~~as~~ ^{the} perfection
of cooking consists in finding
~~them~~ out these relations. —

I am disposed to believe that
^{of cooking} science is still in its infancy,
& will remain so till it is
rescued from the hands of ^{practical} cooks,
& made the subject of philo-
sophical experiments, and
investigation. I believe there
are pleasures to be enjoyed

in eating, ~~that we are said~~
~~to require~~ - and that there
are degrees of health, & long
life to be derived from the pro-
-per & harmonious mixture
of Aliments, that we are
as yet strangers to. Perhaps
discoveries upon this Subject
may be reserved for some of
the female philosophers of
this new world.

I shall briefly explain w.
I mean by ^{the} harmony of Alim.
by a few examples. -

~~Fish & flesh - these~~
~~are~~ Bread & meat -
are related - & form a harmony
when mixed together.

Bread & milk - Bread, and
Butter - Meat & Salt - Salted
& fresh meat - Mustard &
cold beef - Cabbage & Vinegar -
Mutton & turneps -
Venison & Currant jelly -
Pork & Apple Sauce -
are ~~as~~ alike related to each
Other, & are alike grateful
to the taste & ^{alike} healthy when
taken into the Stomach.

Let us next mention a
few instances of ^{the} want of
harmony, or discord in Ali-
ments. -

Fish & flesh when mixed
together - Bread & pudding -
~~Savoury~~ Salt and Sugar -
meat & Sweet Sauce - Butter

Union - Bread & Onion with
Fish -

are all contrary to each
other, and disagreeable to
the taste, & if they do not
offend the Stomach, it is owing
to its peculiar strength & health-
ful State. -

The same observations
apply to drinks. - There is the
same harmony & discord in
them when properly, or im-
properly mixed together.

I shall add one or two remarks
to this subject
The taste when pure is
an infallible mark of wis-
dom & health in Aliment. It is true
the Stomach often receives

out
with rebelling elements that
are not grateful to the taste -
But this is owing to its peculiar
strength. The taste & the stomach
are naturally in Union with
each other - and tho' the stomach
may forbear long, yet it sooner
or later accords th in the decisions
of taste: E.g: Fish & flesh are
unpleasant when mixed together
in the mouth - But they ~~may~~
may be taken in succession,
th w impunity - This is owing
to the stomach not ^{giving} ~~giving~~ an
alarm ^{like the taste} upon the first violence
being offered to it - But attend
to the consequences of persons

Who have long missed fish &
flush together in their stomachs.
- They cannot digest them.
hence we find - when they
eat fish - they prefer eating
nothing after it. -

2 - How shall we account
for so many old people
in high life in all countries?
- we read of noblemen of 70-80
& even 90 years of age who have
feared sumptuously every
day, and yet feel no incon-
-venience from it? - For:
- credit their health & long
life entirely to their living

upon the best of food - mixed
in a manner ^{so as to be in} ~~form~~
^{up to the faste & in}
perfect harmony, & ~~rewards~~
the stomach. ~~every digestion~~ It is this agree-
-able & harmonious mixture
of Aliments that enables some
persons to eat such large & ^{frequent}
~~agreeable~~ meals without much
or any inconvenience, & it is
the want of this ^{or proper mixture} harmony
suppose that makes even the
most wholesome Aliments,
taken in the most moderate
quantities produce diseases
& ~~death~~ in many people.

- The Germans in this State
are much afflicted with
Stomach Complaints, owing to

their elements not being in
Quantity
Quality - or mixture propor-
-tioned to their constant la-
-bor. 3 useful in vegetables - blunts
appetite for excess of meat.
of fermentation.

Even intestine motion between
dissimilar bodies, or dissimilar
elements. all animal &
vegetable bodies undergo it.
Three Stages - ^{Wine} Vinous ^{Vinegar} Acetous.
& putrefactive. -

For fermentation the
following circumstances necessary
1 heat of 80 to 100 degrees
beyond too rapid. -
2 moisture - Sugar never
ferments. -

3 Air - keeps necessary

4 Rest, & in some cases 5 ferment.

We shall
~~off~~ apply these principles
every animal used in diet.
as we go along. Animal food
properly & commanded by god is good for
4 both. 3 most wholesome mixed w. Vegetables.
Meats - wild - most easy of

digestion - heated by exercise - esp:

chase - sooner ~~disposed of~~ tend
from blood they contain
to putrefaction - hence don't
Inhuman practices
be so long keeping - Bull bear -

of - ting - & throwing at such places

substitutes for wild flesh. Legs of

quadrupeds - & wings of ^{wild} birds

from being most used hard:

of digestion. -

Domestic - flesh white - less

savory - grain is gravel
confinement helps to ~~thin~~ ^{thicken} them

necessary - bear keeping - are
moderate exercise dissolves the fat
tendered by it - more so if

killed by electricity - legs less
easy of digestion than wings -
because more used - Ducks
Geese - & pigs best eaten soon - oil
^{rank} Young animals - proper in
strong stomachs - abundant in:

omnivorous - ^{full grown} ~~old~~ easy of digestion
+ Sanctorius' fast christ people?

Best & Mutton easier ~~than~~
best at 5 or 6 years - Wales & Scotland
veal or lamb - why? Mad:

Darwinville taught me - the
first from greater strength of
teeth - stomachs more assi-
-mulated - Veg. matter still
present in veal & lamb. -

first diet of savages - ~~strong~~ -
fish - The sooner eat after

it comes out of the water the
better - practice in Holland
solid ~~and~~ food, requires good
health to bear it. Pepper
Vinegar - Soy - necessary in

it. Hence the Africans all
fond of high seasoning with
it. Swim three times. -
practice & in Scotland a dram
& it floats when boiled and
sinks when boiled too much.

Oysters - abound in nourishment
when best - rogan's fiction on y;
best raw - or only heated &
roasted in a pot. - Clams
best in soup - strong & hard
of digestion. Wilson's case.

Boiling
~~Boiling~~ Roasting first invented.

Boiling - roasting - frying -
stewing - ^{& baking} - By broiling sudd?

we retain the juices of the
meat ^{ch} & are savoury & help
digestion. -

Baking & frying - hardest & turns $\frac{1}{2}$ oil
rancid. -
Boiling most simple - and
if soup or juice used with
easy of digestion - raw - or
it which digests it! -
well done animal food? -
both - best
the last - modern exp: -
more easiest of digestion.

Soup & Broths - very im-
portant articles in housekeeping.
"Take up $\frac{1}{2}$ fragments that
nothing may be lost" said our
Saviour to his disciples. By
making soups we comply
to this injunction. The foll.
circumstances concur to
recommend them: 1st Economy.
Left meat & fragments on
crusts of bread may by these
means be saved from loss.

2 health - 3 a lively state
of ^{the} mental powers - Sparta
Scotland.

Soups Various - French
their soup gros & maigre - the
one th wth & the other th wth out meat -

- Scotch - Barley broth & Hodge
podge - all composed of meat
& vegetables of diff^t kinds, and
in diff^t proportions - Sh^d. be
eaten before meat - afford much

stimulus & prevent excess by
blunting ^{the} appetite.

Improper in fevers - Only cures
preservation of fish^h flesh
1 by salt - 2nd by Sun-drying
- drying moisture - Indians
Sailors - 3 frost ^{fishy} hardening

in houses - better vaults
moisture - Canada - 4 by heat
& molasses 5 Exclusion of Air
- bread - flour - 6 spoke =
7 boiling - a pease - extracts juice
Xmas - ~~herring~~ ^{white makes it ferment} - curious

part of small & large quanti-
ty of salt on meat explained.

Lect 12th
Condiments - what 2

Salt - useful - helps digestion -
Indians use ashes -

Vinegar - ditto - has some
saccharine matter w^h makes
it nourishing. - pickles -
Vinegar in solid form.

Pepper - ditto - in warm
climates & by old people.

of milk -

Differ kinds - a bounds in Sugar
^{goats}
Cows milk

Reserved 1 By a cool Celler
2 boiling it 3 depending it from
the under by weights - iron -
the conception of the Air
only - as the horn & brewing
prove.

12
cured milk - yields cream
coagulation or cheese &c
2 Butter - & 3 whey.

The 1st is of a Veg: Nature
2 animal - hence milk

Veg: & animal.

^{cream first superior}
Butter made by fermentth
of Cream - short time in

cool place -
collecting it - Cleanliness
hot water to clean be -
Butter milk - consisting of
whey - &c - &c

Curd - cheese - made by
1 Rennet - what - 2 Wine.
3 Vinegar. 4 molasses. 5 for
flower of Antichoke - 6 fish.
hence disagreement in stomach.

Rennet best - no taste -

Cheese - old best - salt - col?
^{a substance called}
by Rennet. ~~see~~

Whey - Sweet & wholesome

Eggs how preserved by
oil - how known to be
sound by the tongue. -

ch part animal - ^{most} for
easy of digestion - Madame
Darcenville. ^{It} not be cut
hard. -
Vegetables

By boiling - well boiled best
except cabbage - ^{light} like
fish when boiled and - potato -
toes kept from bursting by
pouring cold water on the
water that boils. preserved by
cells -

^{fruit} Preserved - 1 by drying as
cherries - &c 2 By baking
as peaches 3 by sugar - 4
by excluding air - as Grapes.

Herbs - by drying in the
Shade. —

Of sugar - from Sugar cane
^{leaf - how made -}
sugar tree - But cannot be
1 nourish^t 2 oil 3 mucilage

of oils - salt - & washing -
wholesome - used by Ancient
& Eastern Nations - Butter
^{when fresh -}
butter - mucilage makes it
mix easier &c

of water - excellent drink. Dr

Fothergill's opinion of it

Bread - lean^d & unlean?

Sarah's angels w^{th the} first -

first disorder by a frugal woman
Leav^d with 18000000 of
last baking 2 year what?
how preserved - 4 Pyramont
water & fermented sugar &
water. Bread preserved by
twice baking - universal
food - wholesome - converts
animal food - & presses out saliva
in chewing. - Knows form:

Wine^{Do} - acid - spirit - sugar
& ∇ - nourishing in propor-
- tion to sugar - White - Sweet
& red. - keep best in proportion
to spirit - Vauclt for red -
no weather Madeira - or
Sherry - best for over

Chimati - ~~was~~ Lead used
to sweeten ~~red~~ wines
- detected by solution of
Opiment in lime water.

^{Always} ~~Kingglass~~
fined - by milk & Eggs - Sand &
white paper - how do they cut.

Cyder - ~~was~~ rashed often -
or strained thro' sand & toe -
separates mulage - Pomona
wine - how made -

Beer - from all grains -

Barley best - nourishing -

meat & drink - Porter best

all Vinous fermentaⁿ

Vinegar - from sour wines

- cyder - Beer - & mother -

& wine Stein - or ~~if~~ -

quished by a black bottle.

Spirits - distilled liquors
in various State of fermentⁿ:

Brandy from wine - Rum
Whisky - peach & apple Do.

Liquors cooled - 1 by eva-
poration - Solutions of salts
not by rivers or sea - same
temperature as air - Friction
log book -

Teas - same shrub - the
fragrant taste from herb
^{shd be taken in early}
Green - Perubias -
Flaxseed - & Brass common

in all families - how
made -

Chocolate Shells best for
weak stomach & indolent
people - oil heavy.

Coffee - how cleaned -

Eggs - codfish skin & singlet
with this. ladies I beg

leave to close the present
course of lectures. I have

only to lament that the
short time allowed for

them has ~~now~~ rendered

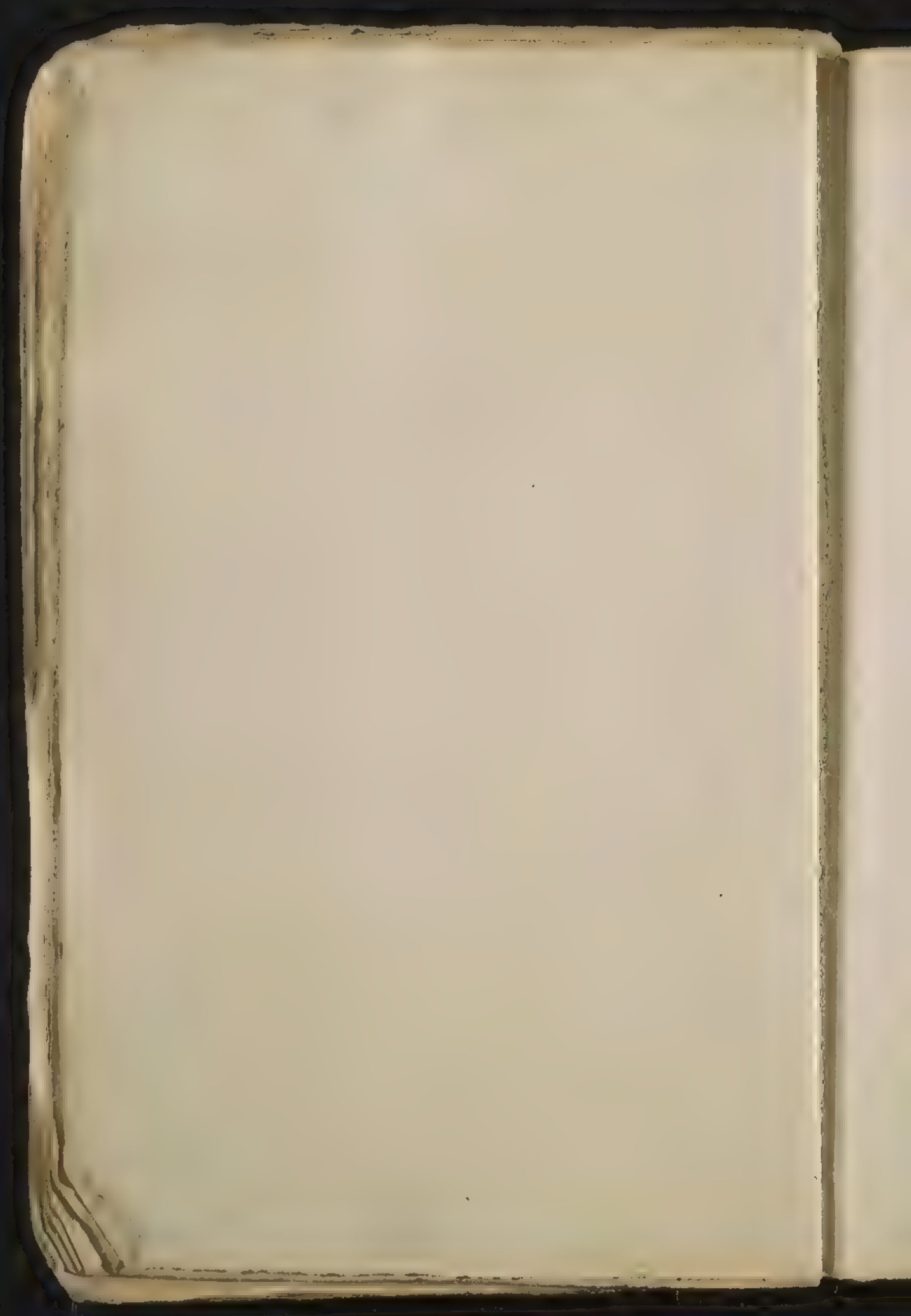
them necessarily ^{very} ~~superficial~~

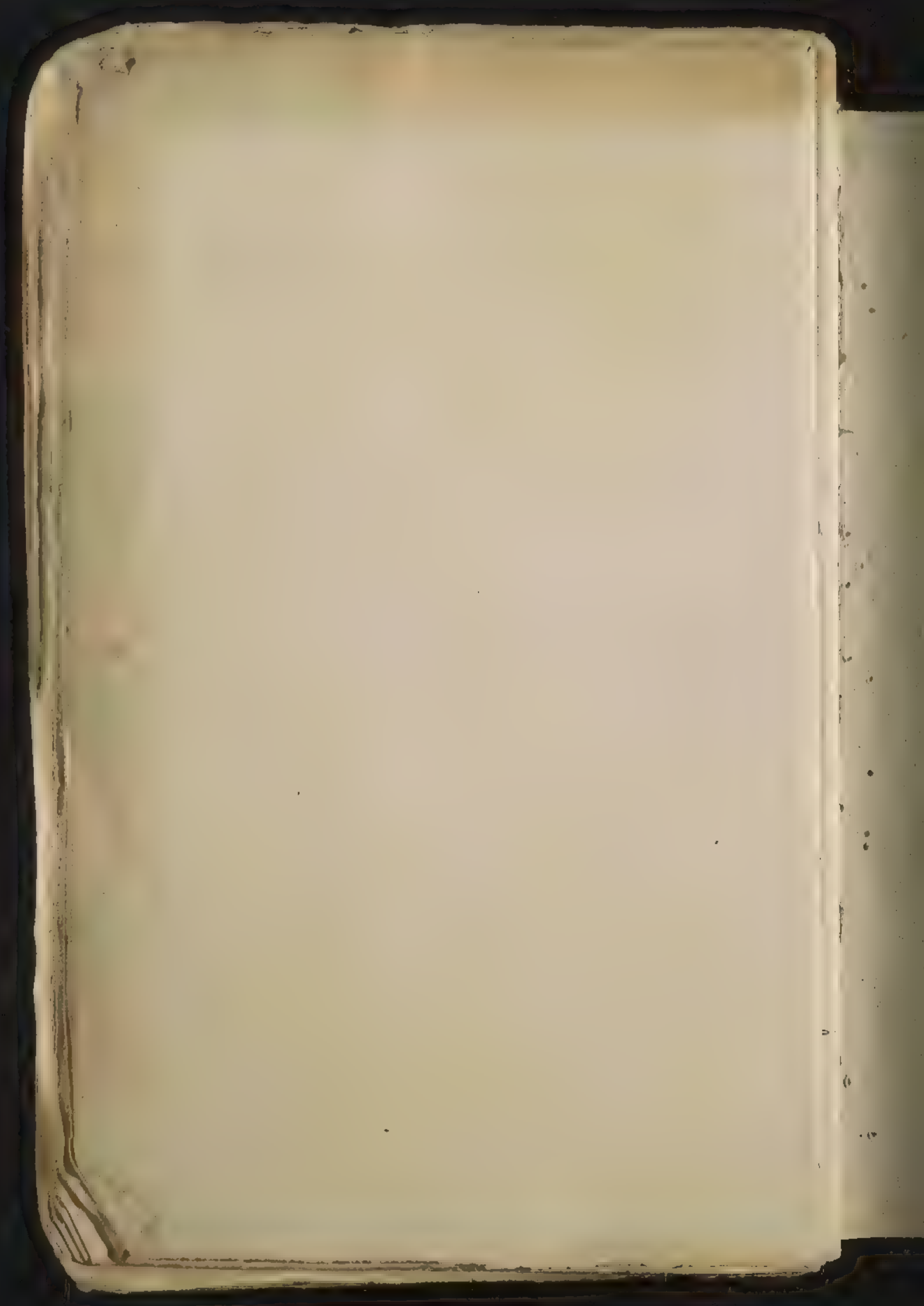
-ficial & ~~and at the same~~

I have given you a few
hints which will enable
you to pursue your inquiries
upon these subjects with
sweep & pleasure. ~~As~~ From
the improvements you have
already made, ~~it~~ I flatter
myself you will become
philosophical as well as
practical housekeepers,
and that you will be able
to ~~derive~~ derive instruction
as well as pleasure hereafter
from the ordinary duties

of domestic life. Accept
of my thanks for the polite
attention with which
you have been pleased to
honour these lectures, &
of my best wishes for
your future happiness,
& prosperity.
~~in all the~~

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J. J. J. J. J.

Order

FOR THE
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Near St. Paul's Church, in Third Street, Philadelphia.

HEAR, ye children, the instruction of a father; and attend to know understanding. Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get understanding.—Exalt her, and she shall promote thee; she shall bring thee to honour when thou dost embrace her. She shall give to thee an ornament of grace; a crown of glory shall she deliver to thee.—Prov. i. 1, 7, 8, 9.
If sinners entice thee, consent thou not.—Prov. i. 12.

To write a free and legible hand, and to understand common arithmetic, are indispensable requisites.—*Mrs CHAPONE's Letters.*

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a good education is not that they should become dancers, singers, players, or painters: its real object is, to make them good daughters, good wives, good mistresses, good members of society, and good christians.—*Mrs MORE's Essay.*

your endeavours are deficient, it is in vain that you have tutors, books, and all the external apparatus of literary pursuits. You must love learning, if you intend to possess it. In order to love it, you must feel its delights; in order to feel its delights, you must apply to it, however irksome at first, closely, constantly, and for a considerable time. Pleasure, indeed, are all the paths which lead to polite and elegant literature. Yours, then, is surely a lot peculiarly happy.—Value duly the opportunities you enjoy, and which are denied to thousands of your fellow creatures. Without exemplary diligence, you will make but a contemptible proficiency. You may pass through the forms of schools—but you will bring nothing away from them of real value. Your mistress may, indeed, confine you within the walls of a school, a certain number of hours. She may place books before you, and compel you to fix your eyes upon them; but no authority can chain down your mind.

That learning belongs not to the female character, and that the female mind is incapable of a degree of improvement equal to that of the other sex, are narrow and unphilosophical prejudices. The present times exhibit most honourable instances of female learning and subsequent superiority. Learning is equally attainable, and, I think, equally valuable, for the satisfaction arising from it, to a woman as a man.—*Knox.*

SYLLABUS

OF LECTURES,

CONTAINING THE APPLICATION OF THE PRINCIPLES OF NATURAL PHILOSOPHY, AND CHEMISTRY, TO DOMESTIC AND CULINARY PURPOSES.

COMPOSED FOR THE USE OF THE
YOUNG LADIES' ACADEMY,

IN

P H I L A D E L P H I A.

P H I L A D E L P H I A:

PRINTED FOR ANDREW BROWN, PRINCIPAL OF THE
SAID ACADEMY,
M,DCC,LXXXVII.

The Application
of the
Principles of Natural Philosophy, ~~and~~
^{and medicine}
Chemistry, to domestic, and culinary purposes.

Composed for the use of
The Young Ladies' Academy,
in

Philadelphia.

By Benjamin Rush M.D. and Professor
of Chemistry in the University of Penn-
sylvania —

And,

Read, by him, in a course of Lectures,
to the
Young Ladies of the first class,
in

October 1787. —

INTRODUCTORY remarks, on the effects of heat and mixture, and on the different objects of Chemistry.

Of Salts.

Of Earths.

Of Inflammable Bodies.

Of Metals.

Of Waters.

Of Airs.

& Situation

Of the direction of a house.

Of the usual materials for building houses.

Of the means of rendering a house cool in summer and warm in winter. ⁺

of the means of creating heat &c
Of Fire-places—Stoves—and Fewel. ⁺

Of the causes, and remedies, of smoky chimnies.

Of Cellars, and Vaults. — a Garden — Stable

⁺ not unhealthy — horse & cow &c

+ Hole a few feet deep in a Cellar excellent. —

— — — — — by sinking.

or more
+ two of the laws of heat.

first. — ⁺ Cold Shower bath (a)

+ Fire in inflammable

bodies.

(as directions when I have to use it under means of preserving female beauty. —

The Application
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Of the preservation of the wood and walls of a house.

+ washing - Of rendering ~~the~~ clean and wholesome. +
 Danger from Of preventing and destroying such insects and noxious animals as infest houses.
 Settling in it
 Afterwards Of the means of defending houses from lightning.

Arches put Of Kitchens, Ice-houses, &c.

out fire. ^{Perse} OF DRESS.
 mention its ^{vol. 3: p. 88 +} Of Woollen, Cotton, Silk, and Linen cloaths. ^{which in Dress} ^{see Vol 2}

Advantages. OF FURNITURE.

Of Plate.

Of Iron, Pewter, Tin, Copper, and Brass vessels.

Of China, Glass, and Earthen ware.

Of Looking-Glasses, Pictures, Prints, and Busts.

Of Beds, Sheets, and Blankets; and of the means of preserving them, &c.

to discharging Of Washing, Bleaching, and Ironing.

fixed air Of Soap, Starch, Blue, and Dyes.

from Shells. Of Clocks, and Jacks.

Of Lamps, and Candles. x Asbestos -
 matches + phosphorus
 Of Pens, Ink, and Paper.

to use it under means of
 preserving female beauty.

Of Books.

Of Thermometers.

Of the Barometer. - ~~Barometer~~

Of the means of preserving Female Beauty.

of Cash & D of Air as connected
 OF ALIMENTS. ^{to health}

Of the final cause of the frequent returns of appetite for food.

Of the harmony between the different kinds of aliment, and its influence upon health and pleasure.

of time of eating. of Sleep.
 OF FERMENTATION. + fixed Air

Of Meats, wild, and domestic, young, and old.

Of Fish.

Of the different methods of cooking animal food.

Of Soups and Broths.

Of the preservation of fish and flesh.

OF CONDIMENTS.

& nitre - making of nitre
 + Of Salt, Vinegar, Pepper, &c.

Of Milk. ^{Land - milk &c}

Of Cream, Butter, Cheese, and Whey.

Of Eggs: + ^x ^{Reptile meat by Dr} ^{to Sal &}
 + prevents worms

+ known to be good by transport
 & loose end was on 3 by sinking.

The Application
of the
Principles of Natural Philosophy, ~~and~~
^{and medicine}
Chemistry, to domestic, and culinary purposes.

Composed for the use of
The Young Ladies' Academy,
in

Philadelphia.

By Benjamin Rush M.D. and Professor
of Chemistry in the University of Penn-
sylvania. —

And,

Read, by him, in a course of Lectures,
to the
Young Ladies of the first class,
in

October 1787. —

OF VEGETABLES.

Of the means of preparing them for food.

Of the means of preserving them

Beans - Chinese a method of using them.

OF FRUITS. + pleasant - ag.

Of the means of preserving them. like worms.

Of the means of preserving herbs.

Nuts - Chestnuts how preserved.

Of Sugar. + see Williams letter.

Of Oils. - Pease preserved in lard lined with tin foil.

Of Water. + mineral &c

Of Bread.

Of Wine. - Sal G. - useful to low wines.

Of Cider. - - Rhona wine

Of Beer. - Mr Beldnap's recipe.

Of Vinegar.

Of Spirits. - composition & danger of use.

Of the methods of cooling liquors. + recipe from

Of Teas, Coffee, Chocolate, &c. review by

Trifling disorders in W. D. are not consulted. as wants - ring Worms - Whitlow - corns -

Sore eyes - Mr Allen's eye & Calam. oint. water: also

to get perfect female beauty. -

Horse & Cow - how to be treated - a Garden &c

produces Dyspepsia.

+ use in diet - scale of D. - tried

with pigs - negroes in W. Indies -

plague not known where used.

- Lament being derived from

labr of negroes - might be had

from maple tree - Beet - (another

refinement of Sugar - use in

preventing Worms.

The effects of cold water &c

Drinks - essay from humane

Society: full.

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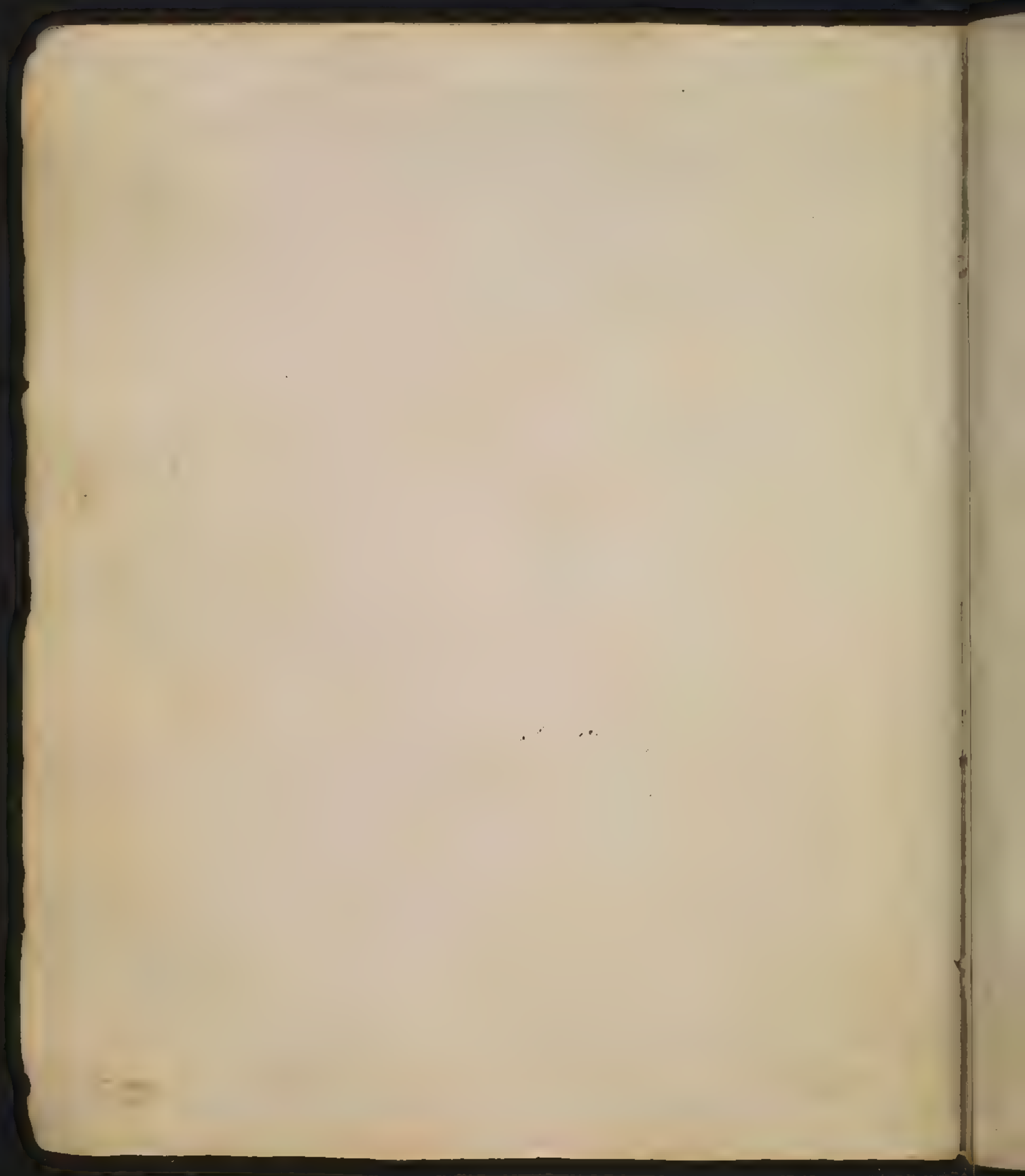
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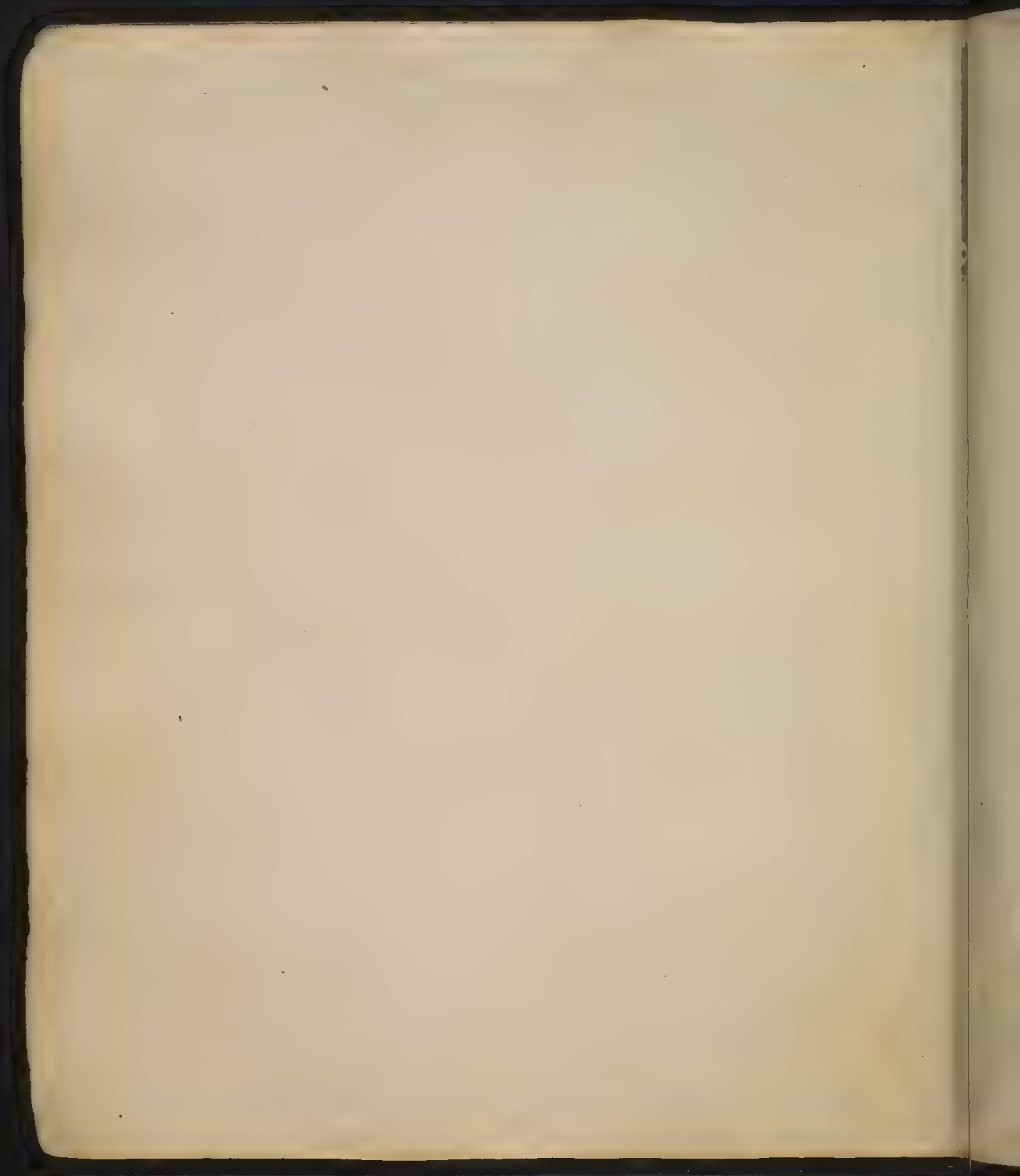


Introductory address.

Young ladies,

The last time I had the pleasure of addressing some of you, I endeavoured to shew you the folly, and impropriety, of acquiring such accomplishments as were not accommodated to the present state of society, manners, and government, of the United States. — To supply the place of these accomplishments, I beg leave to offer to your attention a few plain, and simple, remarks upon such parts of a Natural Philosophy, and Chemistry, ^{of medicine} as are applicable to domestic, and culinary, purposes. This kind of knowledge will be useful to you in a variety of ways. —

1st It will excite a taste for such books as treat more fully upon these subjects, and raise you above the necessity of stooping to novels, and romances, for ^{rest} entertainment.



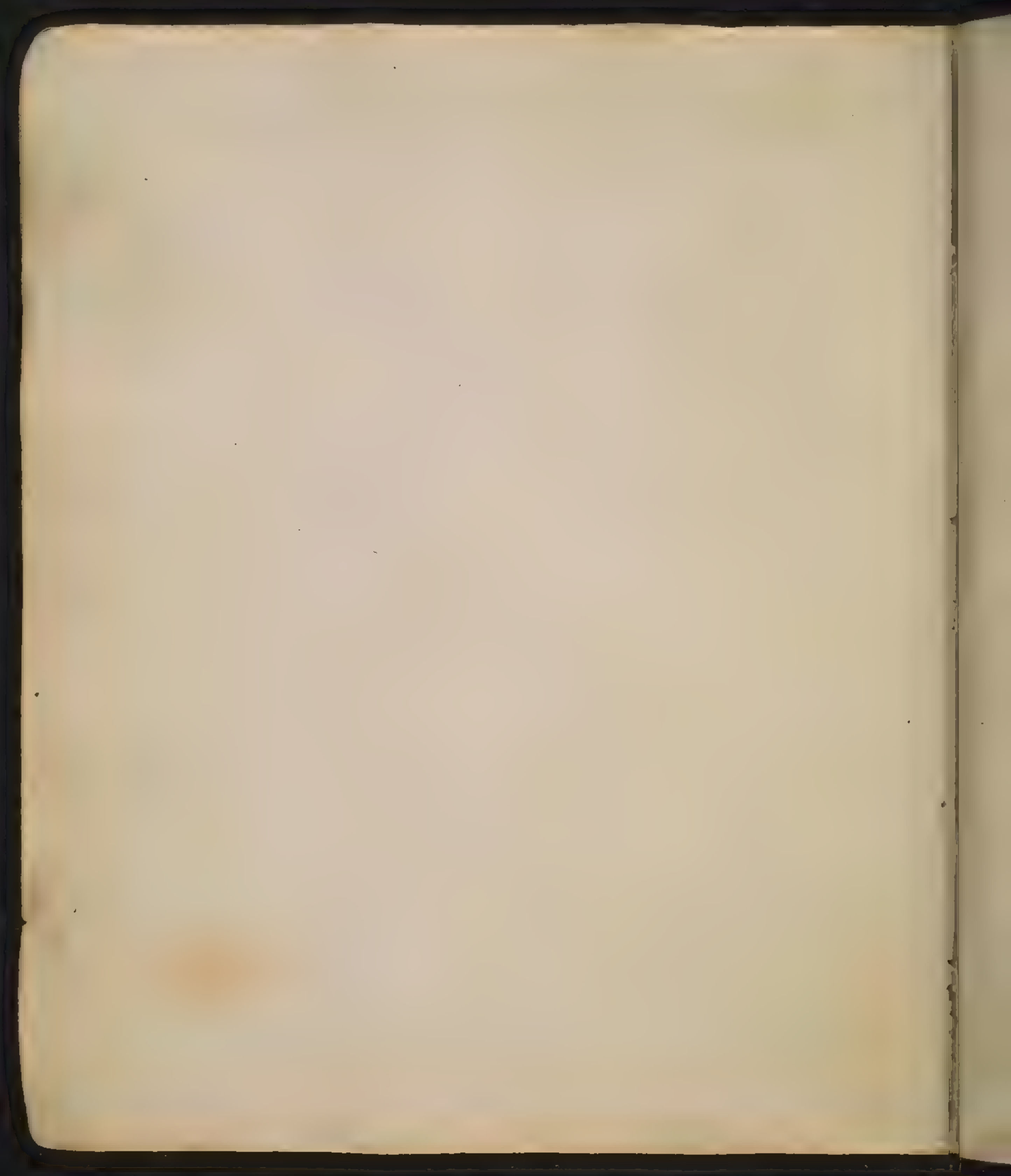
2.^d It will furnish you with subjects for rational and improving conversation, and, thereby, preserve you from dishonouring your understandings, and wasting your time, by deriving all your conversation from dress, fashions, or ~~wanted~~ less innocent subjects. —

3.^d It will cause your society to be sought for, and courted, by sensible men, and be the means of banishing fools, and coxcombs, from your company.

4.th It will afford you pleasure in solitude, and render you independent of public amusements for your happiness.

5.th This kind of knowledge will make you useful to your parents while you remain in subordination to them. And,

6. It will teach you frugality, and oeconomy, and, thereby, qualify you to shine as ^{mothers,} wives, and mistresses, of families, when it shall please God to call you to fill those important, female, stations.



Chemistry

Is that science which teaches the effects of heat, and mixture, for our improvement, in the works of nature and art.

Heat, and mixture, are two powerful, and universal agents, in nature, and art. We see them every where.

In nature, these produce rain, earthquakes, meteors &c.

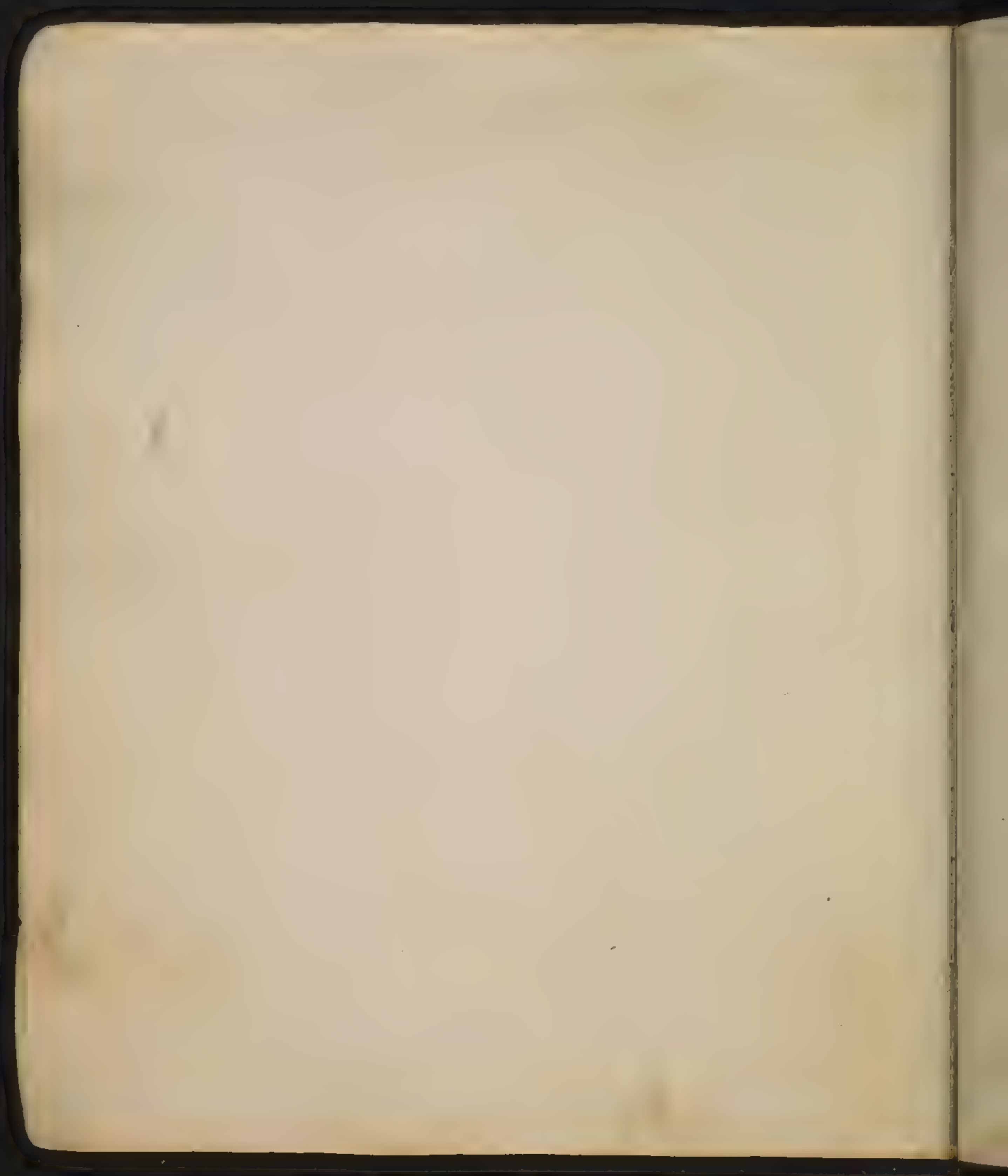
In art — The baker mixes flour, yeast, and water, which, by the application of heat, he makes bread — The brewer from a mixture of malt, hops, and water, with the assistance of heat, is enabled to make beer. — The brass-founder from a mixture of copper and zinc, by the assistance of heat, procures brass. &c.

Of heat.

All heat is originally derived from the sun. It is lodged in all bodies, and is excited,

1.st By percussion — as from flint and steel.

2. By friction. There have been flames produced by the rubbing of the wheels of a cart against the axle-tree. The Indians, frequently, kindle fires by rubbing two sticks together.



3. By fermentation — Hay, if stacked too green, ferments, and is liable to catch fire.
4. By mixture. — Lime in the hold of a ship, mixing with the sea-water, has set the ship on fire. Nitrolic acid, mixed with water, produces heat.
5. By access of air, — as in phosphorus.
6. By the rays of the sun, collected in the focus of a burning-glass.
7. By the application of a burning body.

Law of heat.

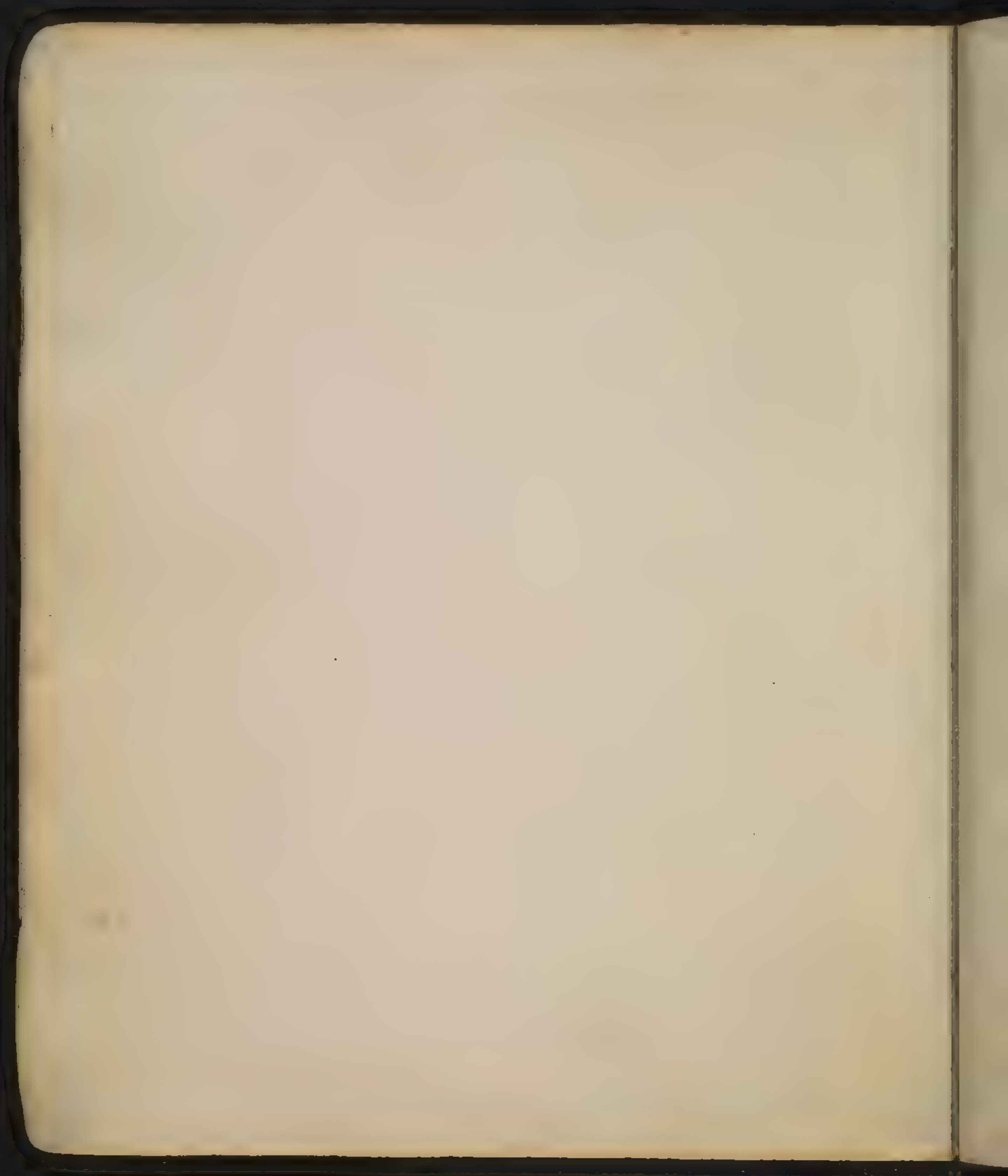
1. It passes more slowly through soft, and spongy, bodies than thro' dense bodies — hence woollen cloaths are warmer than silk, or linen, by retaining the heat of the body: upon this principle many of the Germans, in this country, in the winter season, use feather beds for a covering; for these, being much more soft, and spongy, than blankets, are also warmer: — hence down coverlets are so useful — hence snow, by retaining the heat of the earth, is so useful to the farmer in cold coun-

hix

countries. and promotes verdure early in the spring.
may, so effectually does it confine the heat of the
ground, that a rapid vegetation takes place
under it. hence, the Indians ^{have} sometimes lain
down to sleep, in the woods, with a blanket,
wrapped round them, and in the morning
have found themselves in a ~~vent~~ sweat, tho' covered
with snow, which had fallen, in the night, while
they slept; the snow having prevented the es-
cape of heat, and also the admission of cold:—
hence, also, that wool, with which providence
has covered sheep, for their defence, in cold coun-
tries, becomes hair, in warm ones.

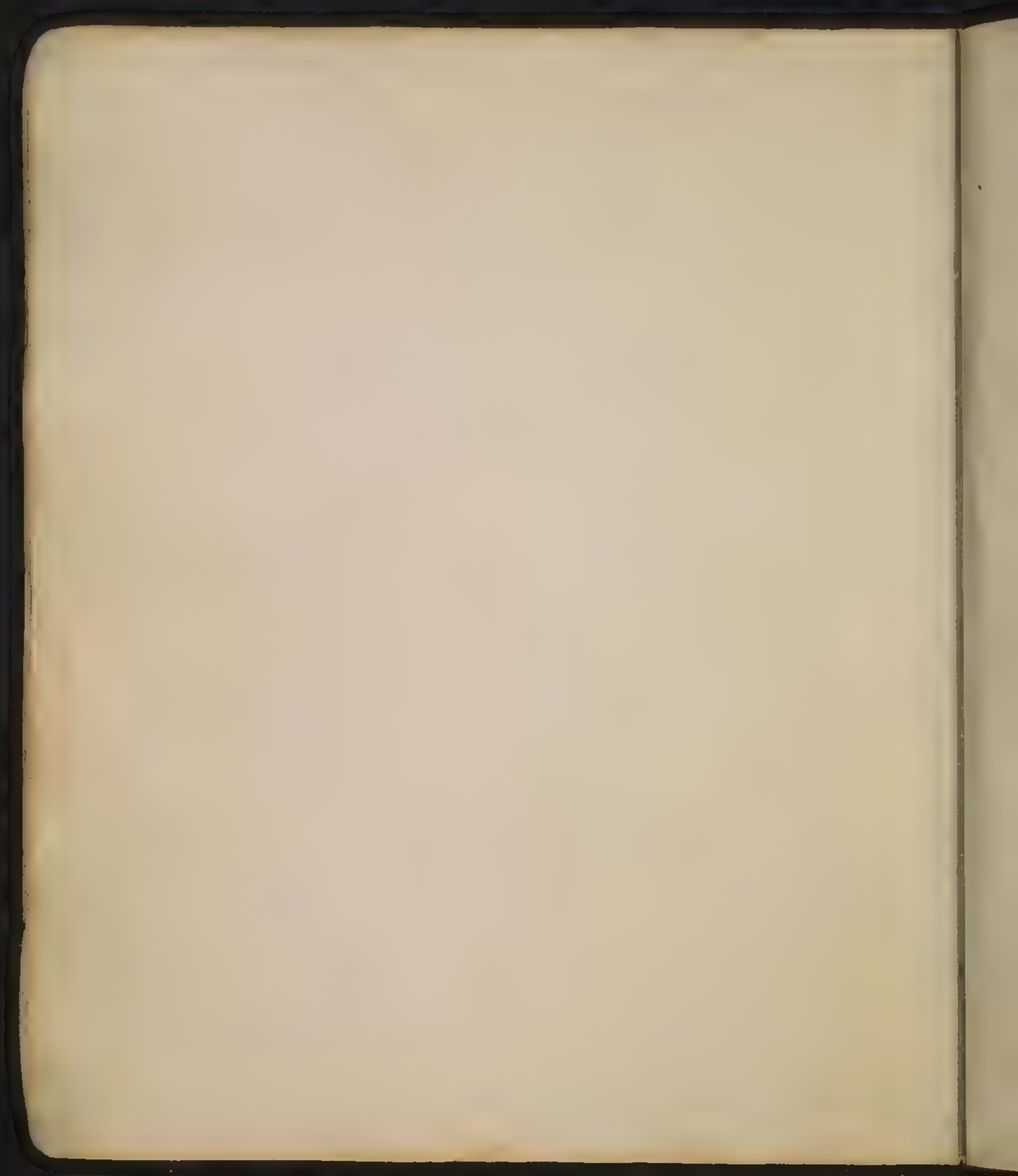
2. Heat passes slowly thro' white bodies— hence the
use of white hats and clothes in summer— and hence,
the goodness of Providence in covering the heads of
old people with white hair.

3. Heat, by communication, produces an equilibrium.
Hence, islands are warmer than continents, the air
in the former being warmed by the communication
of heat from the surrounding waters; besides, winds
blowing over large tracts of uncultivated land, in the
latter



latter, produce cold— hence it is, that orchards on the banks of lakes, or rivers, are less liable to be injured by frost, in spring, than those which are more remote from them:— hence, if a frozen apple &c. be thrown into water, the warmth of the water (for it will be hereafter proved that the coldest water is possessed of heat) will be communicated to the apple, and ~~and~~ will gradually thaw ^{it} the frost, and at length produce an equilibrium of heat:— hence, also, damp air is so cold in winter, and so disagreeably warm in summer; for, this damp air ~~conducts off~~ ^{conducts off} the heat of our bodies ~~to the colder~~ ^{in winter} ~~air~~ ^{in summer}, in winter, but, imparts to ~~the~~ the heat of the warm air in summer.

1. Heat ascends— this may be illustrated by opening a room-door, and holding a candle near the top of it; the blaze of the candle will be forced outwards by the warm air, going out; but, if the candle be held near the bottom, the blaze will be turned inwards, by the cool air, coming in; for air like heat tends to an equilibrium— hence it is that taylor's in Germany sit high; and the French sleep in beds raised so high that they



they are under the necessity of ascending to them on chairs &c.

5. Air is heated by reflection only — not the smallest degree of the Sun's heat is imparted to the air in its passage thro' it to the earth; but, this heat is afterwards reflected by the earth, and imparted to the surrounding air; the heat, thus reflected, does not ascend very high; for, on the summits of some high mountains, coldness, and snow, are found throughout the year; and some adventurers, who have lately ascended, in balloons, to a great height, have felt the cold so intense, even in the summer months, that they were ^{obliged} immediately to descend, lest they should be frozen.

Lecture the 2^d.

Effects of heat.

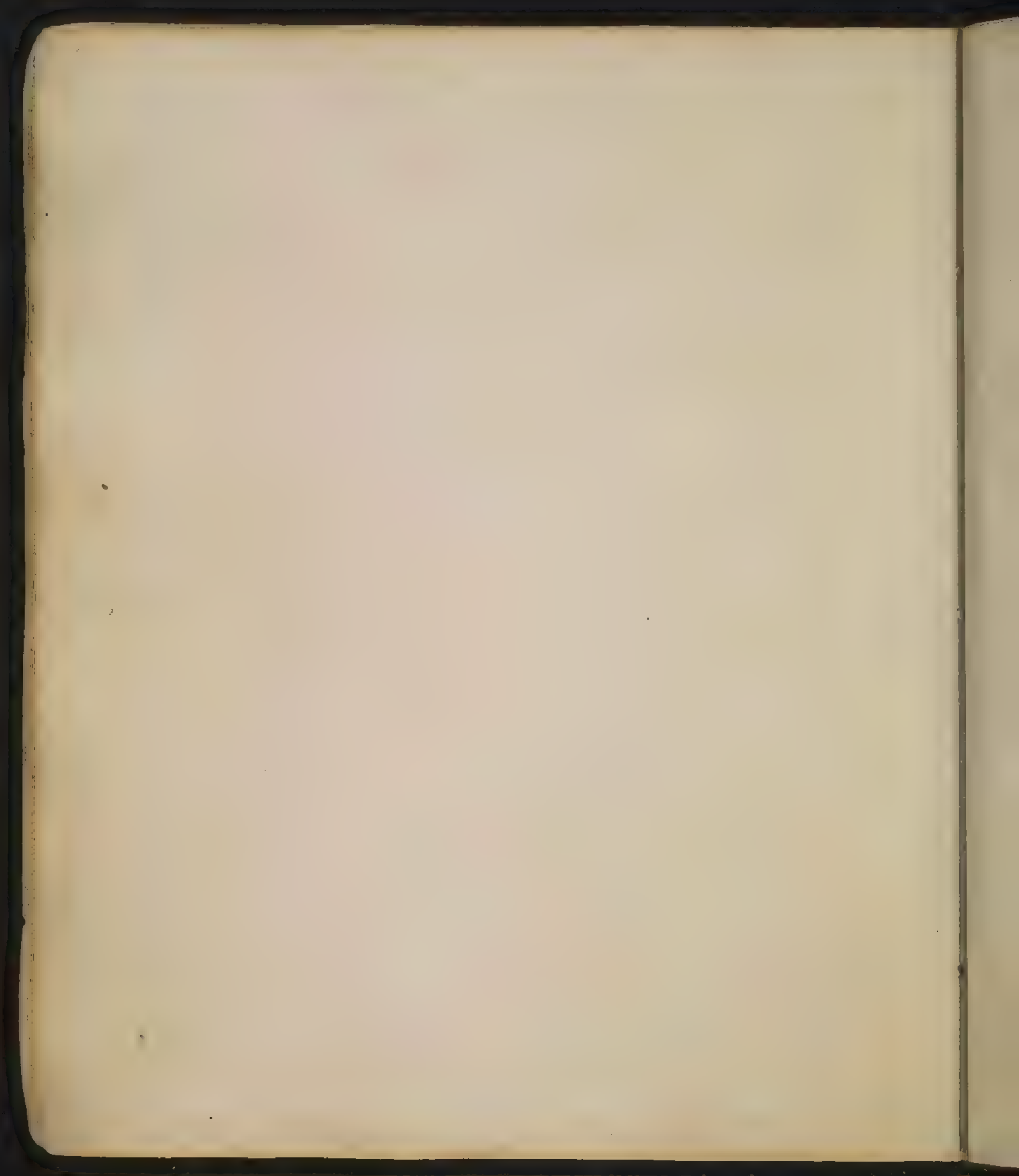
1st Expansion — heat expands, and cold contracts all bodies, except ice; this may be proved by the air in a bladder which will be rarified, and expand when placed near a fire; or by the ~~mercur~~ mer.

of the
A

mercury in a thermometer which expands, with the heat, in summer, and is contracted, by the cold, in winter — these effects may be produced by placing the thermometer ~~in the water~~, in warm, or cold, water — hence, clocks vary, because of the expansion, and contraction, of the brass &c. which compose their works, in warm and in cold weather — Iron bolts are affected by heat & cold, in the same manner —

The constant action of the sun, upon that part of the earth within the tropics, is supposed to have expanded it there; which accounts for its being an oblate spheroid — If red hot iron be applied hastily to a drop of water, or to a spittle, upon a smith's anvil, ^{the} expansion will be so great, that an immediate explosion will take place — Water expands when turned into ice — hence, ice bursts bottles, conduit-pipes &c. — hence, also, its use in crumbling, and fertilizing, the ground — and, hence its effects, in crumbling, and throwing down, houses.

2. Fluidity — all bodies may be rendered fluid by

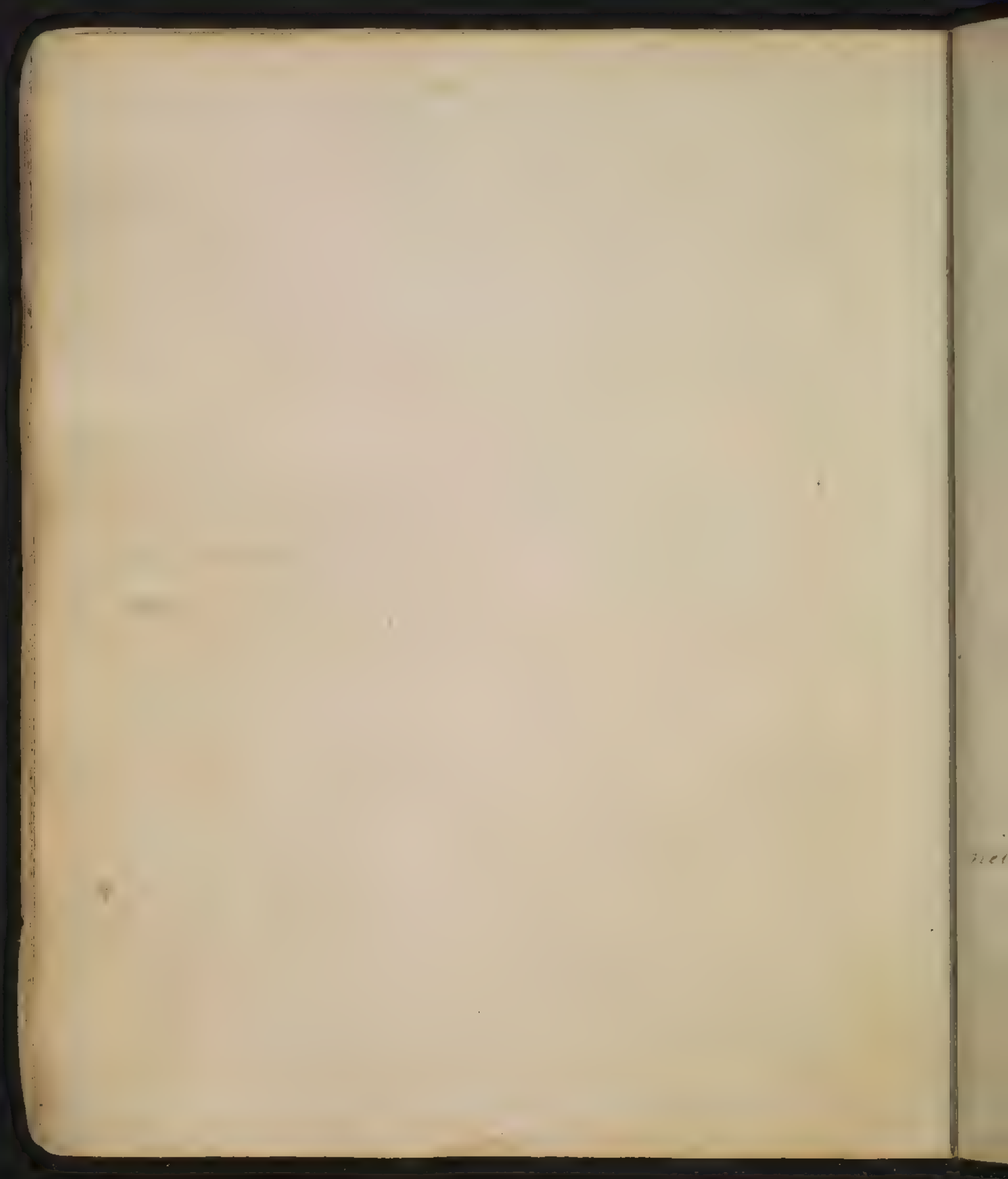


heat - the fluidity of water is entirely owing to heat - when the degrees of heat are so low as 32, by the thermometer, water becomes ice - fire is necessary at 62.

3. Evaporation - all bodies ^{are} capable of it by heat - water, evaporated, is condensed into clouds, and falls in rain - Evaporation wastes all bodies - it produces cold - hence new washed rooms are cool, and dangerous to sickly persons ~~for~~ ~~the moisture, going off by evaporation, not only~~ ~~cools, but is imbibed at the pores~~ -

hence we are cooled in summer by the evaporation of sweat from the pores - The heat of the human body is the same in all climates, and is from 96 to 100 degrees; and however wonderful it may seem, yet it is an established fact, that the human body, in a heat of 120, does not exceed this temperature, which is preserved by evaporation.

The broader the surface the greater the evaporation - hence, on a windy day, lakes, rivers &c. undergo a ^{greater}



greater evaporation than on a calm one. Evaporation increases with the removal of evaporated matter — hence, winds dry roads &c. quickly & hence, also, windy days are coldest, by removing perspiration, and giving access to cold air to come in contact with the body. The force of evaporation is very great, as in steam engines.

4. Flame — this is occasioned by the access of fresh air, which is absolutely necessary to its existence. Inflammation, in all bodies, depends upon a certain principle, in them, called phlogiston; and bodies are more, or less, inflammable, in proportion as they contain a greater, or less, quantity of phlogiston. Tho' fresh air feeds flame, yet, air, when phlogisticated, will ~~extinguish~~ ^{neither feed flame nor support} ~~neither feed flame nor support~~ animal life — hence, ~~neither feed flame nor support~~ ^{of charcoal &c.}

^ people who have gone to sleep, with a fire in their room, and no chimney, or other aperture, to admit fresh air, have been suffocated, in the night, by the air's being phlogisticated. The moving of flame, and its conical form, are owing to the action of air on it.

Foot.



Soot, in chimneys, is produced by vegetable matter, incompletely consumed, by slow fires — hence, it contains much phlogiston, and easily catches fire.

Heat has the most salutary effects in every part of the creation; withdraw it, and vegetables immediately disrobe themselves of all their gay and fragrant flowers leaves &c. No heat are all animals indebted for their existence — so well are the people of Egypt (and, lately, some nations of Europe) apprized of this, that they have contrived a method of producing chickens, in thousands; not by incubation, but by an artificial heat, imparted to the eggs, in ovens curiously constructed for that purpose. Several insects become torpid, when heat is withdrawn, and are revived, only, by the return of its cheering influence.

It has been happily proportioned by the great Creator of the universe to answer every purpose intended by his goodness — too much would expand all fluids — hence rivers would overflow their

A solution of ice, and oil of vitriol, is much colder
than ice alone = A solution of snow and salt,
is extremely cold - hence, heat is lodged in
ice, and in snow.

their banks &c - it would also dissolve solid bodies, as earths - Too little - all nature would be held in icy chains; and our globe present the awful phenomenon of another chaos

Lecture 3.^d

On mixture - This is threefold -

1. Mixture properly so called, is when two bodies are united, and produce heat, as nitric acid and water.

2. Solution - is when two, or more, bodies are united, producing cold - a solution of water and common salt, is colder than the water alone; by adding a little nitre, the solution will become still colder. Experiments may, here, be made, with a thermometer.

3. Diffusion - is, when two bodies, as oil, and water, are united by agitation - this union always ceases with the agitation, which produced it.

Decomposition.

As ~~there is~~ ^{every} body ~~which~~ has ~~not~~ some affinity to, and is capable of being united with, some

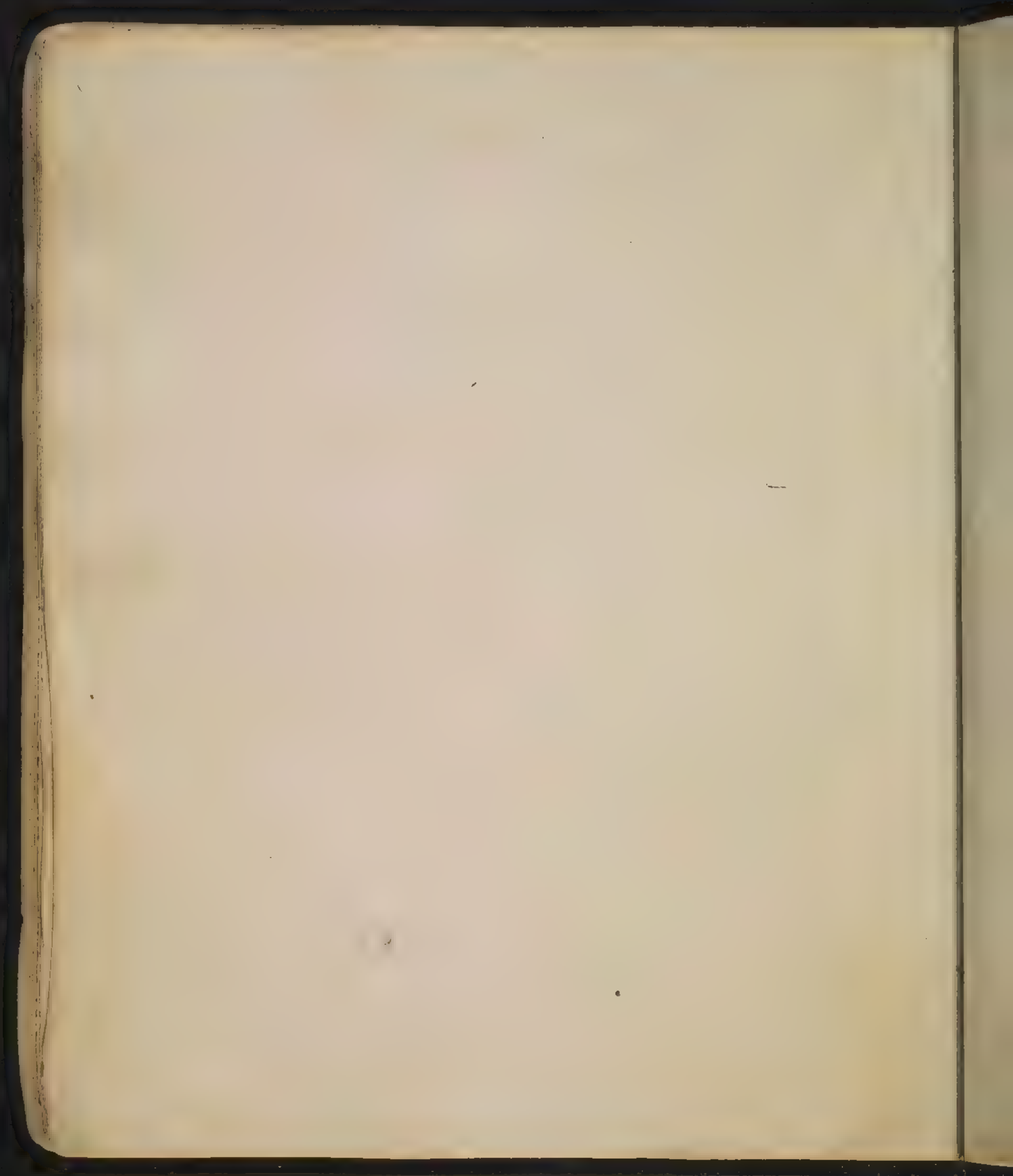
+ See Bergman's table printed by
Mr Doulsen.

some other; so, the union of any two ¹⁸⁶bodies may be dissolved, by the addition of a third, which has a greater affinity, to one of those, than that with which it was united — and this is called decomposition or elective attraction. — thus, if to a solution of marble dust, in vitriolic acid, and water, we add a volatile alkali, ^{or} spirit of sal ammoniac, the vitriolic acid having a greater affinity to the vol. alk. will unite with it &c.

So well is this principle of affinity understood, that some chemists have calculated the different degrees of it, between different bodies, which they have arranged in tables for our instruction.

Salts.

They are divided into acids and alkalies — Acids are divided into the mineral — the vegetable — and the animal — Mineral acids are vitriolic, nitrous, ^{or} ~~and~~ marine — Vegetable acids are native, ^{or} lime juices, — or fermented, as vinegar — Animal acids are those in wine,



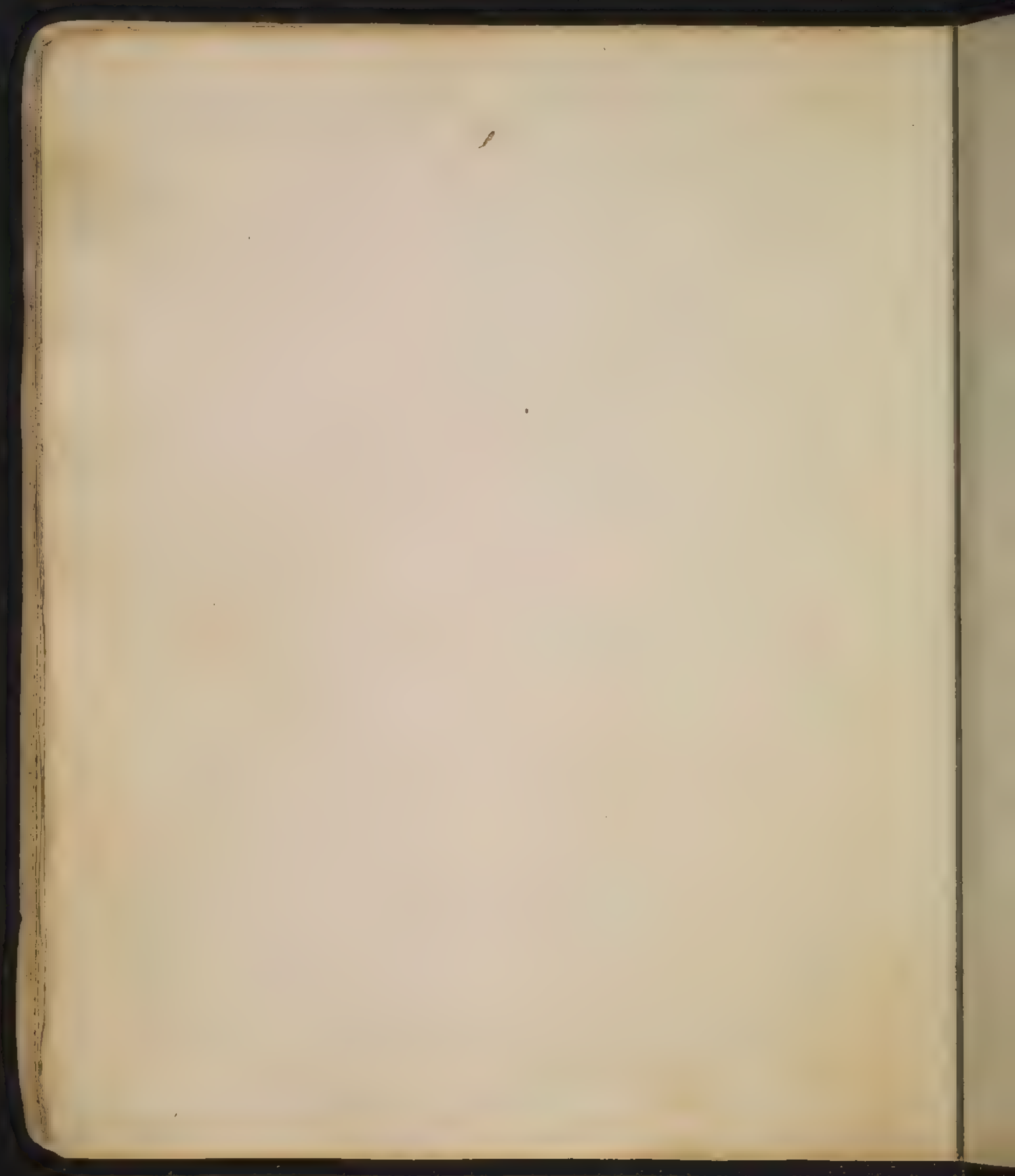
in insects, as ants, wasps, bees &c - hence, the stings of these are poisonous - Acids change the syrup of violets to a red.

Alkalies are of two kinds - 1st fixed - as potash from burnt vegetables.

2^d volatile, as hartshorn; which is obtained, by distillation, from animal substances. Alkalies change the syrup of violets green -

If an alkaline salt, and ^{any strong liquid acid, as} the vitriolic acid, be mixed together, they will immediately unite, and with a considerable effervescence, owing to the escape of fixed air from the alkali; by elective attraction - The proportion of fixed air, in alkalies, is $\frac{1}{4}$ of their weight: this may be proved by weighing the vit. acid, and alk. before, and after, mixture -

Alkalies are mild; but, having emitted their fixed air, are exceedingly corrosive, and caustic; if applied to the skin will burn it.



Lecture 4th

Neutral Salts,

A Common salt, Salt-petre, or Glauber's salt, are composed of an acid and an alkali. Common salt, because of its extensive use in life, particularly deserves our attention.

We find the goodness of Providence displayed in an uncommon degree, in having distributed the means of procuring this necessary article to all his creatures. Thus, in parts remote from the seas we find salt springs and rivers abound from which the people in those parts procure salt. In some parts of Europe, especially, at Cracow in Poland, there are large ^{beds} masses of fossil salt, or salt rock, and in the island of Ormus, in the Indian ocean, houses are built with it. In some places, a sort of salt, called murietic salt, is procured from vegetables, in which it abounds.

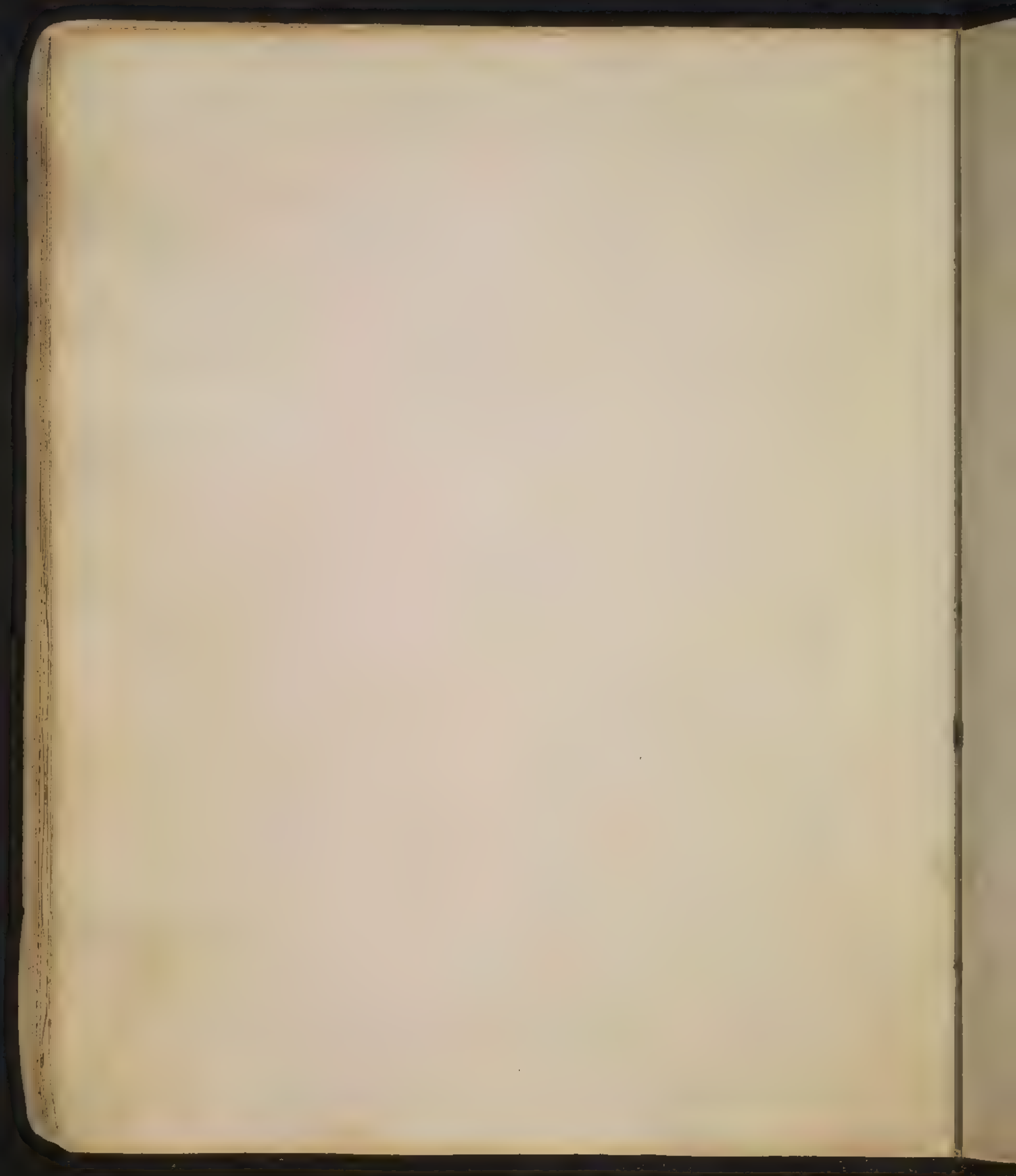
But



But the great and inexhaustible source of this valuable article is the sea. The great Disposer of all things has so ordered it that these waters should be impregnated with salt, for our use - also, to preserve them from putrefaction, from the numerous animals dying, and vegetables rotting, at the bottom. Another great advantage is, that salt water is more buoyant than fresh - hence, it is favourable to the navigation, and tends to promote a commercial, and friendly, intercourse, between the different nations of the earth. The water of the sea, ~~like all other water~~, is originally ^{salt} ~~fresh~~; and its saltness is entirely owing to a mixture of saline particles, from foreign ~~matter~~; ^{rendered} hence, It is ^{means of} saller within the tropics, than towards the poles, by evaporation.

Storms at sea, against which we are too apt to complain, are useful two ways -

1st ^{by} The agitation of the waves a greater surface ^{is exposed,} and, of course, a greater evaporation takes



takes place: the vapours thus exhaled, being condensed in clouds, fall in refreshing showers of rain, and impart their cheering influence to every production of our earth —

2.^d The water near the poles, & within the tropics, also ^{fresh water} of rivers, and of the sea, are hereby more intimately mixed together.

Salt is procured from sea water, —

1.st By drawing the water into canals, and leaving ^{it} to be evaporated, by the heat of the sun, the salt will remain at bottom. This method is practised at the Cape Verde islands, and in other warm climates —

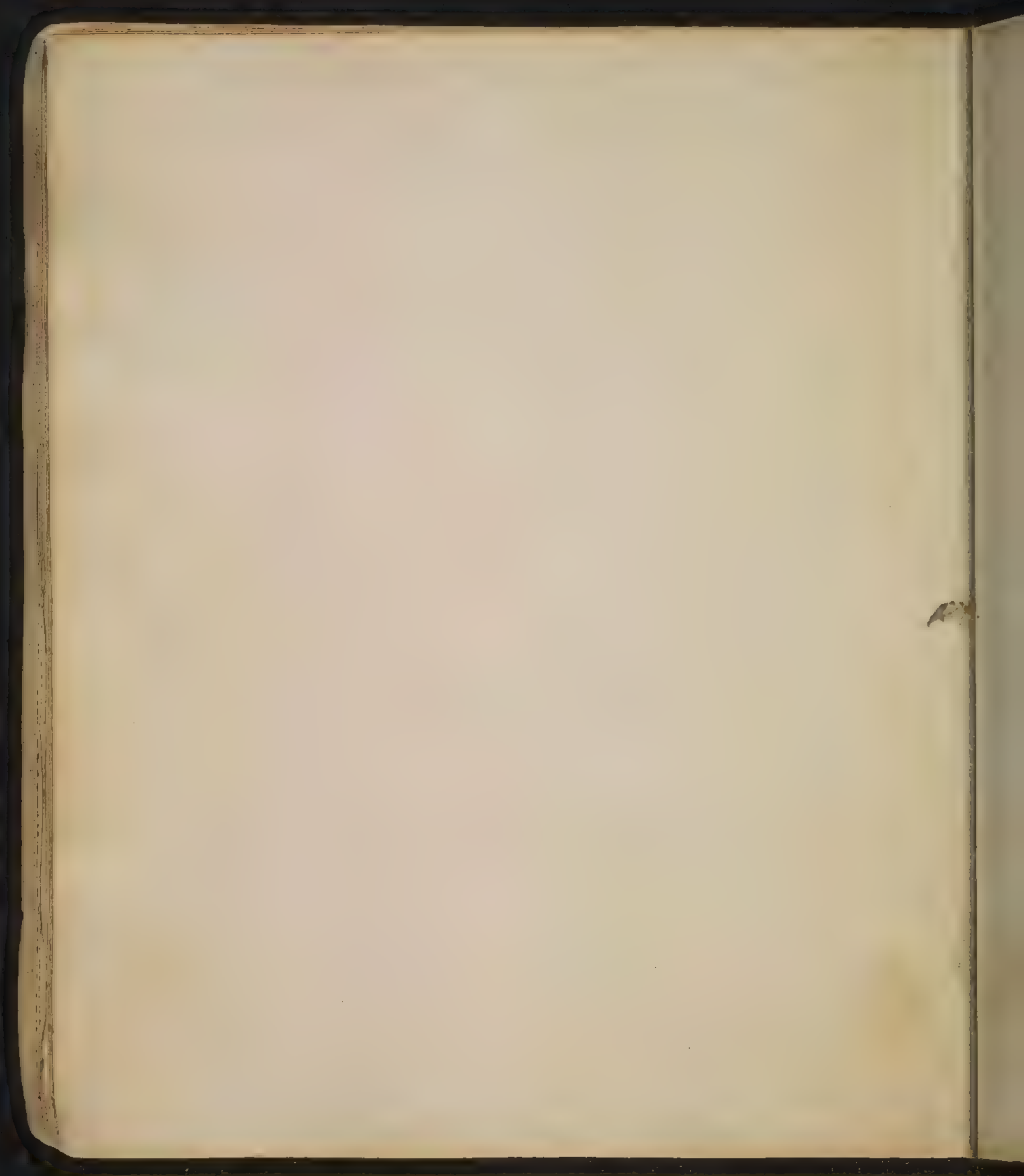
2.^d By boiling it, in large pans, as in England & France &c. For this process a curious method of purifying, or refining, it, is used. — They take the whites of a few eggs, or some bullocks' blood, which they mix, and effectually incorporate, with a little of the water, and afterwards throw it into the pan — this —

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this, while the water is ~~useless~~^{boiling}, coagulates, and unites itself with the filth, which it raises to the surface of the water, when it begins to boil - this being skimmed off, every impurity is removed - after this manner pure salt is also obtained from sal gem, or salt rock, by boiling it in fresh water -

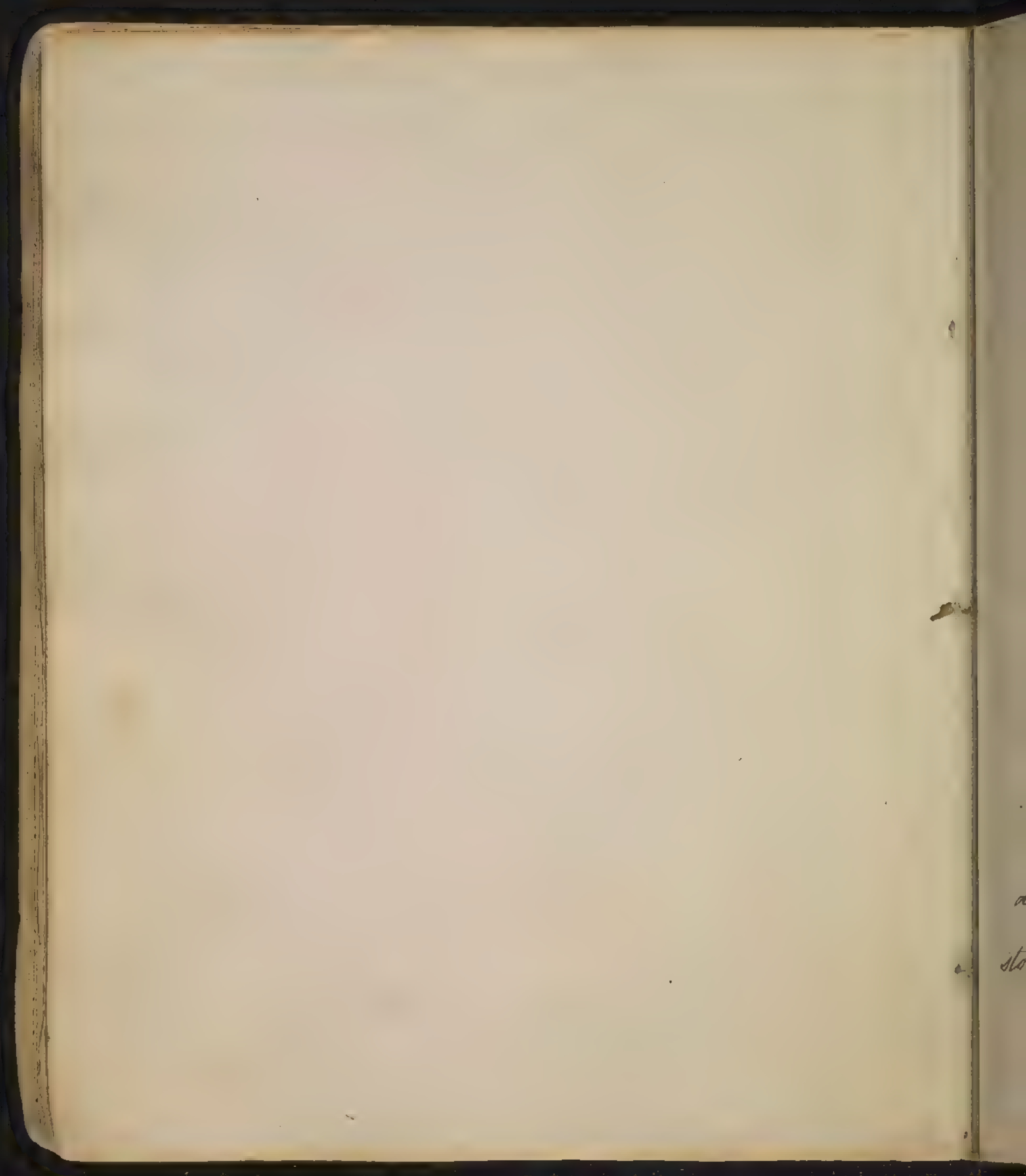
3.^d By freezing, as in Norway - the ice being removed, the salt will remain at bottom.

The water and salt are also separated by the ^{which} pores discharging ~~transpiration~~^{perspiration} - hence thirst may be removed, at sea, after the fresh water has been expended, by placing the person in a barrel of sea water; for the water, without any of its saline particles, will be imbibed ^{by} the pores.



Of nitre, or salt petre.

It is of very extensive use in different arts; it is the principal ingredient in gun-powder; it is useful in glass making; and in medicine — but, its principal domestic use, is, in preserving meat, to which it communicates a red colour — hence, the method of procuring it is well worth the attention of every lady, who would wish to excel in housewifery, and domestic economy — This, like common salt, is composed of an acid and an alkali — if we take sweepings of cellars, pigeon houses, stables &c. rubbish of old houses, and any animal, or vegetable, matters capable of putrefaction — these steeped in water will communicate a nitrous acid to it; if to this water an alkali, as lye, be added and boiled with it, the acid and alkali will unite, and produce nitre —



In Germany where domestic economy is much attended to every family generally makes its own salt petre. It is likewise obtained from tobacco leaves. —

Earths.

are, 1st Calcareous, as ^{stone} lime, chalk, marble &c. — lime stone, and marble, abound in Pennsylvania — chalk is found in large quantities in England; hence we hear of the white cliffs of Albion which are nothing else but great bodies of chalk.



chalk - one fourth part of the weight of these is fixed air they also contain some water - they are soluble in acids; and effervesce with them, by the escape of their fixed air - when calcined by a strong fire, they part with the water and air which they contained; acquire a great degree of causticity; and lose their ^{quick} power of effervescing with acids - thus, lime is obtained -

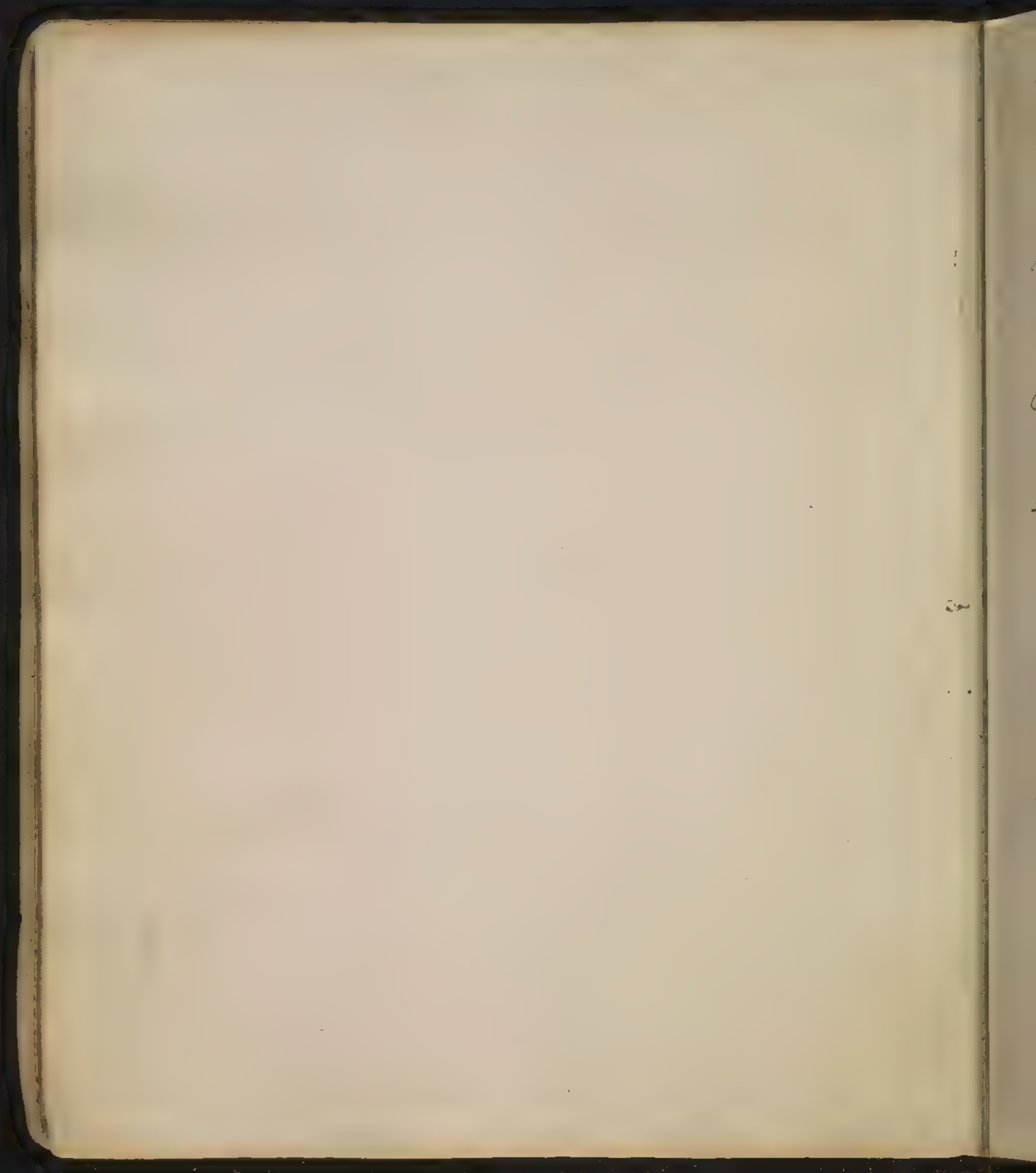
2. Gypsaceous, which are not affected by acids, as plaster of Paris, . It is much valued, and used as a manure for promoting the growth of grass.
3. Stinty, as sand, stones, jewels &c. there are of different values - one, in the crown of the king of Great Britain ^{is valued at} £100,000 - their variety of colour is owing to a mixture of metallic matter - hence a method has been dis-



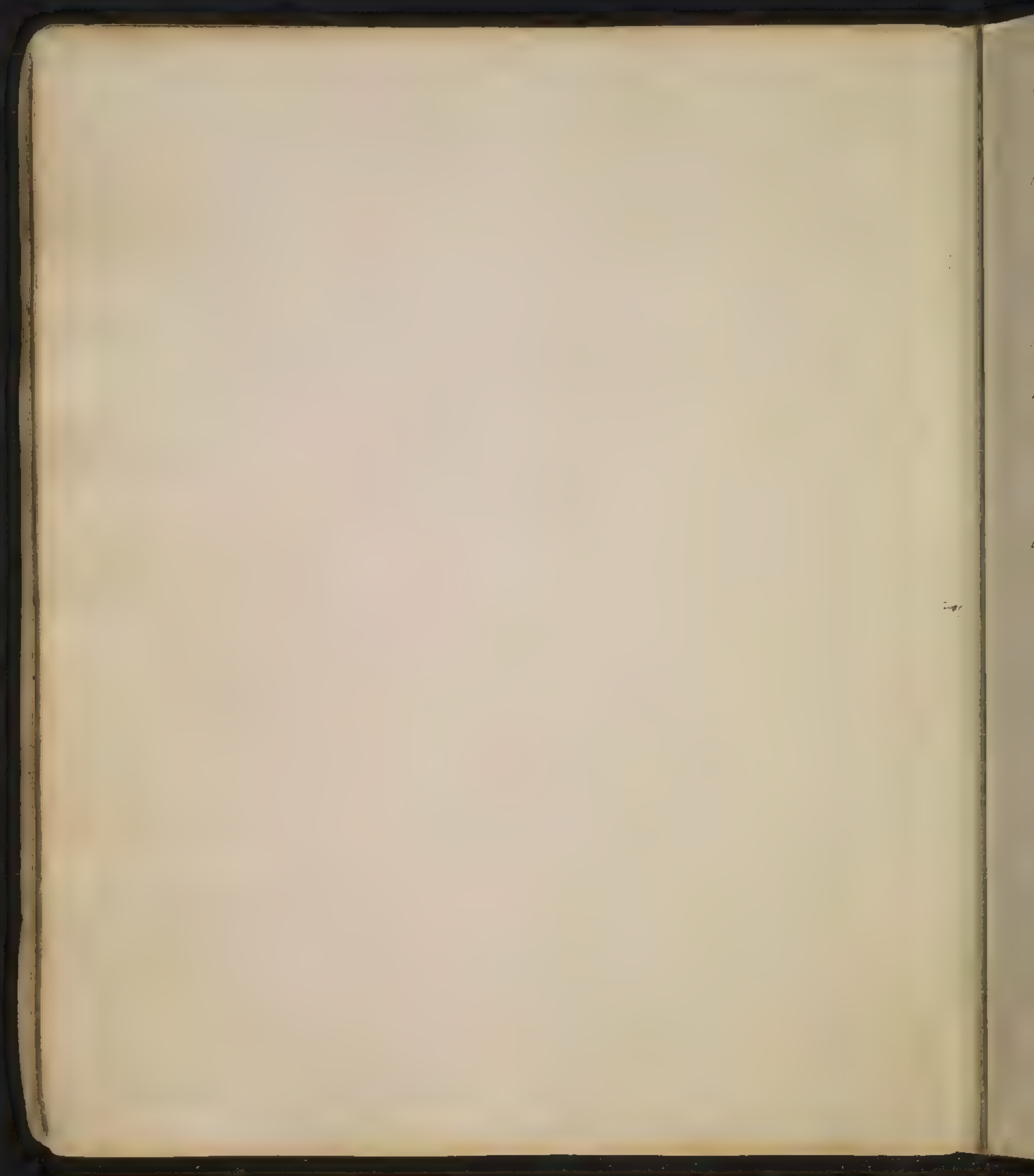
discovered of making artificial stones,

from fine sand melted by alchemical glass is made - this discovery was first made by some men who were cast away on a desert island having kindled a fire of wood upon the sandy beach they beheld a liquid running in streams along the ground which when cooled was found to be a transparent glass - this effect was produced by the alk. salt, in the wood, melting the sand underneath -

4. Pyrous, which resist fire; as ising. glass - another species of this earth is, the asbestos, commonly called the salamander stone - this is of a greyish colour - it may be split into threads, from one to ten inches long, very fine; and brittle, yet somewhat tractable, inasmuch that it may be carded and spun



with cotton (not alone) — the cloth, made of
this, is endowed with the wonderful property
of remaining unconsumed in the fire; the
fire only cleans, and makes it a little whiter
it deprives it also of a small portion of its weight
which may be by depriving it of its dirt —
In garments of this the Egyptians burn the
corpses of their departed friends, and so pre-
serve their ashes from being dispersed. —
of this a certain Sus.^h Wright who lived on the
banks of Susquehanna, and was famed for
her industry, and ~~good housewifery~~ ^{great meritorious accomplishments}, made
a purse which she presented to Doctor Frank-
lin — this the Doctor, in a pretended fit of
passion at his servant, before a numerous
company of gentlemen, ~~and~~ ⁱⁿ ~~the~~ ^{the} threw
into the fire; which so alarmed them that
they ran to save it; but how great was
their surprise on finding it entirely safe,
only a little whiter than before — the



The Doctor having explained this phenomenon to them, a very agreeable fit of mirth ensued. This stone is found at Anglesy, in Wales, and at Aberdeenshire in Scotland; it is also found in large beds in Chester county in Pennsylvania.

5. Clays are various in their colours according as they are mixed with metallic matters. Fire, by depriving them of their metals, makes them white. From clays thus burned are made tobacco pipes - also a sort of substitute for China ware, which is called delf from its having been first made at a town in Holland called Delft. Clays may be dissolved in acids. alum composed of vitriolic acid and clay, ~~which produces a double sort of liquid~~. This by adding an alkali, fixed or volatile, gives ~~adense~~ a neutral salt according to the nature of the acid added.



From a fine white clay, which the Chinese term kaoli, and a flinty earth, which they call petunee, china-ware is made —

Lecture 5th

Inflammable bodies.

There are, all animal, vegetable, and some mineral substances — the diff^t sorts are,
1st Fuel of all kinds, which contains much phlogiston, as sea or fossil coal — also charcoal, which is much used by artificers in metals, and is made by burning wood to coals, in a pit covered over with earth — in Scotland, and Ireland they burn a sort of black earth called peat, or turf, which, being much mixed with vegetable matters, is very inflammable — another sort of fuel is wood which is more or less inflammable in
pro-



proportion to the quantity of phlogiston it contains. Pine & Ivory must be inflammable, from their abounding most with phlogiston.

2. Oils— all sorts of these possess a considerable quantity of phlogiston: hence they are very inflammable. Oils are, aromatic, as oil of turpentine; and unctuous as sweet oil &c — unctuous oils are divided into the vegetable, as butter — and animal as lard — bears' grease &c — All unctuous oils are made rancid by heat, owing to a watry body, mixed with them, called mucilage; which ferments and rots in butter &c. in warm weather — This mucilage may be drawn off from butter by washing it with fresh water; for having a greater affinity to ^{the} water, than to the oil a decomposition will take place and it will unite with the water — the best way of preserving butter, is, to use but little water, and, to press it well.

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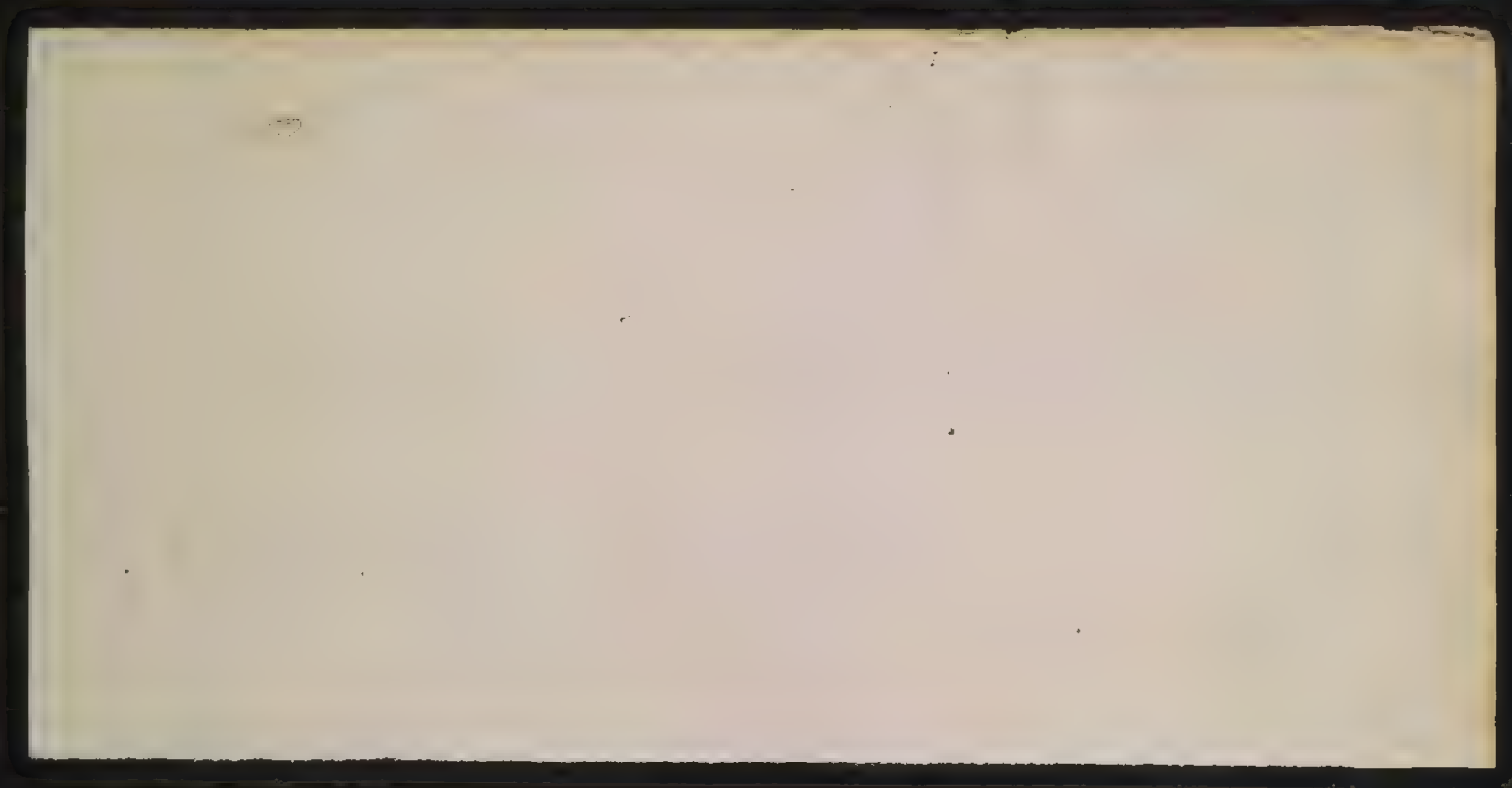
In order to prevent rancidity in ~~butter~~^{oil} it is
also ^{add to it a little} necessary to ~~mix it with~~ salt; this effectually sepe-
rates the mucilage from the oil; and dissolving
unites with it, and carries it to the bottom
leaving the pure oil at the top - After
butter or oil have become rancid, they may be pu-
rified considerably, by washing them with water.

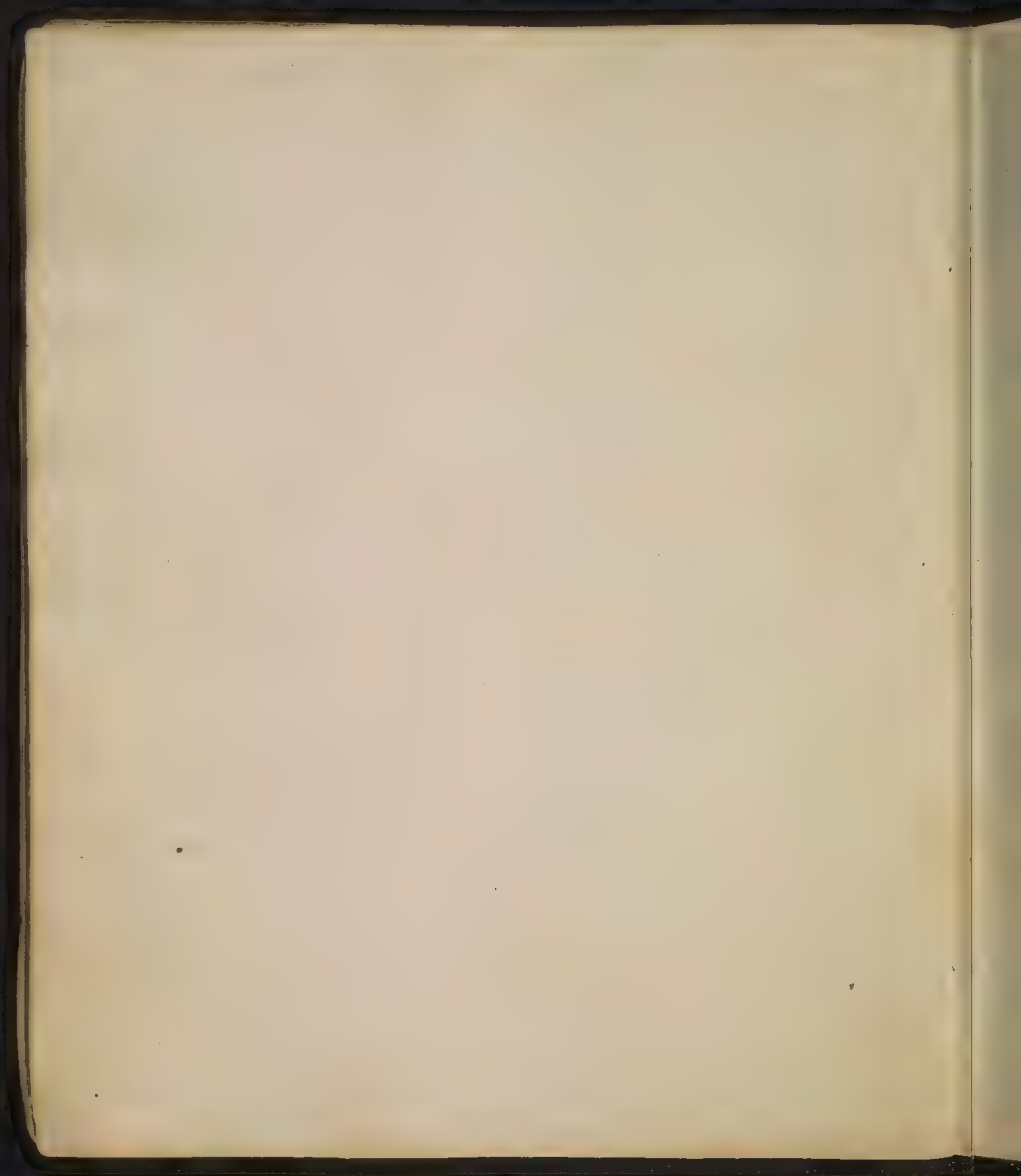
3. Sulphur - This being composed of a vitriolic acid and
phlogiston is exceedingly inflammable - if it be burned,
and its fumes collected, in a vial, we shall have a
vitriolic acid - Sulphur is found mixed with all
metals; iron ore, in particular, abounds with it - In
many places, it is found, in large quantities, in
the bowels of the earth; where it frequently
atches fire, and, by water communicating with
this fire earthquakes are produced; for the fire
converts the fixed air into elastic air, which,
together with a steam, or vapour, produced by
the contact of the flame & water, produces the
explosion and all the usual phenomena
of earthquakes. -

well washed &

Stale butter may be very greatly improved by being put into a churn with buttermilk which has been produced from fresh cream, or (which is better) into sweet milk, the action of churning reduces it in appearance to its first state, and by continuing to churn, it again comes to the consistence of butter.

Butter washed well with water & churned w.
it makes it keep sweet. Healan





Sulphur unites with most metals, destroys their malleability and even dissolves them; but to melt gold, it must be united with a fixed alkaline salt, forming a compound called hepar sulphuris, or liver of sulphur. This effectually dissolves gold so as to make it soluble in water. This preparation is thought to be the means by which Moses dissolved the golden calf, idolatrously set up by the Israelites, which he caused them to drink. This, being an exceedingly bitter solution, was, in some degree, a punishment for their ~~impious conduct~~ ^{idolatry}. Moses being skilled in the wisdom of the Egyptians, to whom chemistry was early known, very probably, acquired his knowledge of this science among them. — Hepar sulphuris is made by melting sulphur with a gentle heat, and stirring into it, while melted, ^{with} four times its weight of dry alkaline salt — or, by boiling the sulphur in a solution of alkaline salt.



If any thing be written with a solution of lead, and a solution of hepar sulphuris be passed over it, when dry, the writing, formerly invisible, will immediately appear of a dark colour.

4. Spirits. These are composed of an acid, water, and a fine oil; they contain much phlogiston, hence they are very inflammable. By distilling spirit of wine with vitriolic acid, we obtain that fine fragrant oil called ether; this is much lighter than any known fluid, except air. Ether poured upon a lump of sugar, and let fall to the bottom of a vessel, filled with vitriolic acid, and water, rises to the top, and escapes in flame. This is vulgarly called a fire in water, but, since fire cannot exist in water, the flame can only take place at the surface. There is also a certain oil called naphtha, produced from black bituminous earths, in milldams, and other stagnant waters; it is also found in some springs.



This oil is exceedingly light, ~~clear as crystal~~, and highly inflammable - hence, it easily catches fire, on the surface of those waters wherein it is found - hence, we hear of burning lakes, and burning springs

5. Resins. ~~as benzoin or turpentine from which~~
~~as rosin is procured~~ these dissolve in spirit of wine; hence varnishes are procured.

6. Phosphorus. This is composed of phlogiston feebly united with ~~nitric~~^{an} acid, and has the singular property of kindling into flame, spontaneously, when exposed to the air; for the phlogiston separates from the nitric acid, and unites with the air, when admitted. - Several bodies partake ~~a~~ much of the phosphoric nature, such as lightwood - The fire fly is a phosphoric animal, and, when flying, discharges large quantities of phlogiston - hence, the ocean frequently seems to be on fire -

Aetons



Meteors are bodies filled with phlogiston, which
separates from them in their motion. — The
ignis fatuus, or Jack with a lantern, may also
be clasped with phosphoric bodies.



Lecture 6th
On metals.

They are divided - 1st into metals, which are malleable; as lead - 2^d semimetals, which are immalleable; as quicksilver - The malleability of metals is owing to phlogiston; the extraction of this by fire or acids makes them become a calx, or dross: this is called calcination of metals - By adding ^{a body that affords with} phlogiston to this calx and melting it may be restored to metal again; this is called reduction of metals - Thus, grease melted with calx of lead reduces it to lead.

This calcination, and reduction, are truly emblematic of the resurrection of our bodies, at the last day. The soul is, as it were, its phlogiston; when separated by death, the body becomes, like a calx of metal, calcined; but, by the reunion of the soul, it again assumes its ancient form -

v. Gold

As of all metals the heaviest, the purest, and the



the least liable to be affected by fire, air, ^{&c.} hence, by the universal consent of all nations, ancient, and modern, it is justly reckoned the most valuable of metals; and is made use of in coin, as a medium of commerce. Buttons, Watches, &c. made of this metal, are very durable; and because of their value, are apt to be best taken care of, and longest preserved. This metal is useful in gilding, and an excellent means of preserving furniture; it is capable of extension in wire, and leaf, almost beyond conception: the tenacity of its parts is amazingly great; for a piece of gold wire of an inch in diameter will support a weight of 500 pounds: the colour of gold, of all others, except green, is most delightful to the eye. — When one of the inspired writers attempted to convey, to man, some idea of the grandeur, and magnificence, of the new Jerusalem, he discovered the high estimation in which

Revelations 21. 107.

which gold was held, in those days; by saying
it ~~was~~ ^{should} be built of ~~transparent~~ ^{transparence} or shining
of ~~pure~~ gold — Gold is found in different
parts of the world; especially at Brasil a
portuguese settlement in South America.
It may be melted by a combination of the
nitrous and marine acids called aqua re-
gia, or the royal water — a solution of it may
also be made by ^{hepar sulphuris &c.} ~~hepar sulphuris &c.~~ as has been
mentioned, in treating of inflammable bodies.

2. Silver,

This, next to gold, is the most perfect, fixed, and
ductile of all metals. The tenacity of its parts
is nearly one half less than that of gold; a silver
wire of $\frac{1}{10}$ of an inch diam. being unable to bear
more than 270 pounds. It is found in many
parts of the world; but, abounds most in Mexico,
and other parts of South America, belonging
to the Spaniards. At Mexico, twenty millions
of dollars are made annually; But so lazy
has



has this redundancy of wealth rendered the Spaniards, that they neglect agriculture and other useful arts, which might furnish them with the necessary, and convenient, articles of life — hence their dollars are drawn from them in exchange for the produce of different countries, in Pennsylvania we find Spanish dollars are received in large sums, in purchase of wheat &c.

A solution of silver in aqua fortis, called lunar caustic, is sometimes used by ladies, to stain their hair black; from red or some other colour not pleasing to them; but, for this purpose, it is necessary to dilute a tea spoonful of the solution in half a pint of water — If it be not cautiously used, it is apt to corrode the hair; therefore, every person ^{using it} should consider, that the hair with which Providence has covered her head, altho' it may be red, is, nevertheless, preferable to a bald head. The stain, thus communicated to hair, does not continue long. —

3^d



3.^d ^{one of} Iron is the hardest and most elastic of metals -
this metal is of more real service to mankind
than, perhaps, all the other metals taken together,
being used in making implements of husbandry,
artificers tools, of all kinds, surgeons' instruments,
culinary vessels &c. I wish I were not there
forced to add that it has been early employed,
in making instruments of death, to carry on
wars and bloodshed; but, since these things must
be for a time, let the friends of humanity
remember that this is not always to be
the case; and, with pleasure, look forward to
the time when swords shall be turned into
ploughshares, and spears into pruning
hooks, and nations learn the art of war no
more. Iron melts by heat; but the heat must
be very ~~warmed~~ ^{intense}, as may be known at any
iron works, where this metal is used in cast-
ing pots &c. - At Carron iron works near
Ed.



Edinburgh, in Scotland, while the metal was
preparing in a reservoir, one of the proprietors
ascending a ladder to look into the reservoir
the brilliancy of the flame gave him a dazzle
which occasioned him to tumble in headlong;
some present immediately ran up the ladder,
but could perceive no appearance of him, so
that he must have been consumed in a mo-
ment. All acids act upon iron, from this, by
the application of vitriolic acid, green vitriol, or
copperas is made, which is so useful in dying.
Astringent vegetables, and water impregnated
with iron, give a dark colour. Hence, the only
things proper in making black, are, ^{an} astring-
gent vegetable, as white oak bark, or galls, with
copperas, and water. Thus ink is made. Water
acts upon iron, ^{corrodes} and rusts it.

7 m

4th

Iron contains a large quantity of phlogiston; iron filings catch fire on touching them with the blaze of a candle - hence fire is so easily procured from steel by percussion with a flint. It is found every where. It abounds in different parts of N. America and is exported in large quantities.

It is diffused in animals and in vegetables; even honey contains some of this metal.

Amistiff

Iron filings and sulphur, moistened with water, and pressed down close, in a few ~~hours~~^{days} expands, and grows hot; and, if the quantity is large, bursts into flame. Iron, by cementation with inflammable matters, imbibes a larger quantity of phlogiston, and becomes much harder: it is then called steel.

4th Copper. This metal melts by heat - all acids act upon it as does water, or moist air - with vitriolic acid it makes blue vitriol, sometimes called roman vitriol, or blue stone; which is of a very caustic and corrosive nature, and being dissolved in water gives a beautiful blue; by adding a volatile alkali, ^{or} ~~xx~~ spirits of sal ammoniac, a decomposition ensues

arises; for the nitric acid unites with the alkali and the copper, being thus separated; falls to the bottom. By the action of a vegetable acid, as vinegar, upon copper, a poisonous substance, called verdigris, is formed — hence the danger of using copper vessels — Copper, by the addition of the semi-metal, zinc, becomes brass, pinchbeck &c. by adding a little zinc to copper the colour will incline to yellow; by adding more it will become pale, and by adding a still greater quantity it will at length become white. —

Bell metal; and that for telescopes & microscopes &c. and for casting cannon are made from a mixture of copper or tin — Copper is not so hard as to strike fire with flints or other stones. hence it is used, in preference to Iron, for chisels, hammers, hoops &c. in gunpowder works. —

5. Lead. This metal is easily melted and calined, and by continuing the heat we procure what is called yellow lead; and, by heating it yet further, we procure red lead, used in painting.

By adding phlogiston to the calx, in any of these stages, it will immediately be reduced to lead again: thus if to a red washer, which contains some red lead, we add a little grease, and burn them, we will procure a little lead. ^{acids, especially} All vegetable acids, act upon lead; and produce a sweet, but poisonous, solution, which is sometimes wickedly used to recover sour wines. Printers' types are made of lead and zinc.

6. Sn. This metal, tho' ^{more} ductile in plates, than iron or steel; yet, is not capable of being extended in wire to the same degree that they are. vegetable acids have no effect upon it. Hence, its use in covering over the inside of other metal vessels; as those of copper & lead — of tin and zinc. pewter is made.

Semimetals

1. Zinc. It is chiefly used in compounding the other metals. The vitriolic acid combined with this gives white vitriol, which is used in medicine; and

2.

1

1

4

٦٠٠

11

62

10

1

234

11

24

and, also, in painting, to dry oil colours quickly.

2. Mercury, or quicksilver, dissolves in acids of every kind; but, not in water; mixed with tin-foil it is used in looking glasses to reflect the rays of light. — It unites with, or dissolves, all the metals; except iron. — Being mixed with any other metal, it still retains its white colour. — Hence, it renders brass extremely like ~~into~~ silver. — It unites with, and softens, gold: so that a ring may be taken off the finger, if too tight, without filing, by rubbing it with quicksilver; which will render ^{it} so soft, that it may be broken, in several pieces, with a person's fingers. —

19 : 1000 ::

13 : 120 :: 19

$$\begin{array}{r} 19 \\ \hline 1040 \\ 120 \\ \hline 13 \overline{) 2290} \quad C 17 \\ 95 \\ \hline 2 \end{array}$$

Monday the 14 day may



♈ *Aries*, or the Ram.
♉ *Taurus*, the Bull.
♊ *Gemini*, the Twins.
♋ *Cancer*, the Crab.
♌ *Leo*, the Lion.
♍ *Virgo*, the Virgin.
♎ *Libra*, the Balance.
♏ *Scorpio*, the Scorpion.
♐ *Sagittarius*, the Archer.
♑ *Capricornus*, the Goat.
♒ *Aquarius*, the Waterbearer.
♓ *Pisces*, the Fishes.

[illegible]
$$1-26-12-4$$

Swainson's Wren.

T. C. Q. B. ex. Ar.

1-20-4-28-16-16.

Tracy Wright

ib. 62. dist. 57.

1-12-30-29.

1890. 1891. 1892. 1893. 1894. 1895. 1896. 1897. 1898. 1899. 1900. 1901. 1902. 1903. 1904. 1905. 1906. 1907. 1908. 1909. 1910. 1911. 1912. 1913. 1914. 1915. 1916. 1917. 1918. 1919. 1920. 1921. 1922. 1923. 1924. 1925. 1926. 1927. 1928. 1929. 1930. 1931. 1932. 1933. 1934. 1935. 1936. 1937. 1938. 1939. 1940. 1941. 1942. 1943. 1944. 1945. 1946. 1947. 1948. 1949. 1950. 1951. 1952. 1953. 1954. 1955. 1956. 1957. 1958. 1959. 1960. 1961. 1962. 1963. 1964. 1965. 1966. 1967. 1968. 1969. 1970. 1971. 1972. 1973. 1974. 1975. 1976. 1977. 1978. 1979. 1980. 1981. 1982. 1983. 1984. 1985. 1986. 1987. 1988. 1989. 1990. 1991. 1992. 1993. 1994. 1995. 1996. 1997. 1998. 1999. 2000. 2001. 2002. 2003. 2004. 2005. 2006. 2007. 2008. 2009. 2010. 2011. 2012. 2013. 2014. 2015. 2016. 2017. 2018. 2019. 2020. 2021. 2022. 2023. 2024. 2025. 2026. 2027. 2028. 2029. 2030. 2031. 2032. 2033. 2034. 2035. 2036. 2037. 2038. 2039. 2040. 2041. 2042. 2043. 2044. 2045. 2046. 2047. 2048. 2049. 2050. 2051. 2052. 2053. 2054. 2055. 2056. 2057. 2058. 2059. 2060. 2061. 2062. 2063. 2064. 2065. 2066. 2067. 2068. 2069. 2070. 2071. 2072. 2073. 2074. 2075. 2076. 2077. 2078. 2079. 2080. 2081. 2082. 2083. 2084. 2085. 2086. 2087. 2088. 2089. 2090. 2091. 2092. 2093. 2094. 2095. 2096. 2097. 2098. 2099. 2100. 2101. 2102. 2103. 2104. 2105. 2106. 2107. 2108. 2109. 2110. 2111. 2112. 2113. 2114. 2115. 2116. 2117. 2118. 2119. 2120. 2121. 2122. 2123. 2124. 2125. 2126. 2127. 2128. 2129. 2130. 2131. 2132. 2133. 2134. 2135. 2136. 2137. 2138. 2139. 2140. 2141. 2142. 2143. 2144. 2145. 2146. 2147. 2148. 2149. 2150. 2151. 2152. 2153. 2154. 2155. 2156. 2157. 2158. 2159. 2160. 2161. 2162. 2163. 2164. 2165. 2166. 2167. 2168. 2169. 2170. 2171. 2172. 2173. 2174. 2175. 2176. 2177. 2178. 2179. 2180. 2181. 2182. 2183. 2184. 2185. 2186. 2187. 2188. 2189. 2190. 2191. 2192. 2193. 2194. 2195. 2196. 2197. 2198. 2199. 2200. 2201. 2202. 2203. 2204. 2205. 2206. 2207. 2208. 2209. 2210. 2211. 2212. 2213. 2214. 2215. 2216. 2217. 2218. 2219. 2220. 2221. 2222. 2223. 2224. 2225. 2226. 2227. 2228. 2229. 2230. 2231. 2232. 2233. 2234. 2235. 2236. 2237. 2238. 2239. 2240. 2241. 2242. 2243. 2244. 2245. 2246. 2247. 2248. 2249. 2250. 2251. 2252. 2253. 2254. 2255. 2256. 2257. 2258. 2259. 2260. 2261. 2262. 2263. 2264. 2265. 2266. 2267. 2268. 2269. 2270. 2271. 2272. 2273. 2274. 2275. 2276. 2277. 2278. 2279. 2280. 2281. 2282. 2283. 2284. 2285. 2286. 2287. 2288. 2289. 2290. 2291. 2292. 2293. 2294. 2295. 2296. 2297. 2298. 2299. 2300. 2301. 2302. 2303. 2304. 2305. 2306. 2307. 2308. 2309. 2310. 2311. 2312. 2313. 2314. 2315. 2316. 2317. 2318. 2319. 2320. 2321. 2322. 2323. 2324. 2325. 2326. 2327. 2328. 2329. 2330. 2331. 2332. 2333. 2334. 2335. 2336. 2337. 2338. 2339. 2340. 2341. 2342. 2343. 2344. 2345. 2346. 2347. 2348. 2349. 2350. 2351. 2352. 2353. 2354. 2355. 2356. 2357. 2358. 2359. 2360. 2361. 2362. 2363. 2364. 2365. 2366. 2367. 2368. 2369. 2370. 2371. 2372. 2373. 2374. 2375. 2376. 2377. 2378. 2379. 2380. 2381. 2382. 2383. 2384. 2385. 2386. 2387. 2388. 2389. 2390. 2391. 2392. 2393. 2394. 2395. 2396. 2397. 2398. 2399. 2400. 2401. 2402. 2403. 2404. 2405. 2406. 2407. 2408. 2409. 2410. 2411. 2412. 2413. 2414. 2415. 2416. 2417. 2418. 2419. 2420. 2421. 2422. 2423. 2424. 2425. 2426. 2427. 2428. 2429. 2430. 2431. 2432. 2433. 2434. 2435. 2436. 2437. 2438. 2439. 2440. 2441. 2442. 2443. 2444. 2445. 2446. 2447. 2448. 2449. 2450. 2451. 2452. 2453. 2454. 2455. 2456. 2457. 2458. 2459. 2460. 2461. 2462. 2463. 2464. 2465. 2466. 2467. 2468. 2469. 2470. 2471. 2472. 2473. 2474. 2475. 2476. 2477. 2478. 2479. 2480. 2481. 2482. 2483. 2484. 2485. 2486. 2487. 2488. 2489. 2490. 2491. 2492. 2493. 2494. 2495. 2496. 2497. 2498. 2499. 2500. 2501. 2502. 2503. 2504. 2505. 2506. 2507. 2508. 2509. 2510. 2511. 2512. 2513. 2514. 2515. 2516. 2517. 2518. 2519. 2520. 2521. 2522. 2523. 2524. 2525. 2526. 2527. 2528. 2529. 2530. 2531. 2532. 2533. 2534. 2535. 2536. 2537. 2538. 2539. 2540. 2541. 2542. 2543. 2544. 2545. 2546. 2547. 2548. 2549. 2550. 2551. 2552. 2553. 2554. 2555. 2556. 2557. 2558. 2559. 2560. 2561. 2562. 2563. 2564. 2565. 2566. 2567. 2568. 2569. 2570. 2571. 25

U. 02. dr. ser. 17.

14-12-3-20

Wm. Weaver.

T. P. H. C. Q. P. G.

$$1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-10$$

Long Measure.

D. M. F. P. Y. F. I. B.

$$1-6 \frac{1}{2}-8-40-51-7-12-3.$$

360 Degrees are the circumference
of the Globe.

Land Notes.

A. H. F. Y.

$$1 - 4 - 4 - 4 - 5$$

D. V. Moore.

B. P. C. P. G. P.

1-4-2-2-3-4.

Week 10/11/12

Y. R. N. In-

7-4-4-22

June

Y. D. H. M. S.

1-7541-7 1-61-60.

Thirty six, 22nd September,

April, June, and November;

Feeding bath every eight * alone.

All the rest have thirty-one,

* Twenty-nine, every 4th in leap year.

| | | | | | | | | | |
|--------------|---|---|---|---|---|---|---|---|---|
| C Millions. | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| X Millions. | 3 | 0 | 5 | 2 | 1 | 4 | 6 | 8 | ■ |
| Millions. | | 2 | 0 | 4 | 6 | 8 | 0 | 9 | 5 |
| | | | 4 | 0 | 2 | 5 | 3 | 0 | 0 |
| C Thousands. | | | 8 | 2 | ■ | 0 | 7 | 5 | 3 |
| X Thousands. | | | | 2 | 0 | 0 | 0 | 9 | 8 |
| Thousands. | | | | | 5 | 0 | 0 | 1 | |
| | | | | | | 7 | 0 | 0 | |
| Hundreds. | | | | | | | 9 | 1 | |
| Tens. | | | | | | | | | 4 |
| Units. | | | | | | | | | |

| d. | | i. | d. |
|-----|---------|----|----|
| 20 | } are { | 1 | 8 |
| 30 | | 2 | 6 |
| 40 | | 3 | 4 |
| 50 | | 4 | 2 |
| 60 | | 5 | 0 |
| 70 | | 5 | 10 |
| 80 | | 6 | 8 |
| 90 | | 7 | 6 |
| 100 | | 8 | 4 |
| 110 | | 9 | 2 |
| 120 | 10 | 0 | |

1 5 10 50 100 500 1000
I. V. X. L. C. D. M.
MDCCLXXXVII.

BOOK

2
FOR THE
YOUNG LADIES' ACADEMY,

Near St. Paul's Church, in Third Street, Philadelphia.

HEAR, ye children, the instruction of a father; and attend to know understanding. Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get understanding.—Exalt her, and she shall promote thee; she shall bring thee to honour when thou dost embrace her. She shall give to thine head an ornament of grace; a crown of glory shall she deliver to thee.—PROV. iv. 1, 7, 8, 9.
If sinners entice thee, consent thou not.—PROV. i. 12.

To write a free and legible hand, and to understand common arithmetic, are indispensable requisites.—*Mrs CHAPONE's Letters.*

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a good education is not that they should become dancers, singers, players, or painters: its real object is, to make them good daughters, good wives, good mistresses, good members of society, and good christians.—*Miss MORE's Essays.*

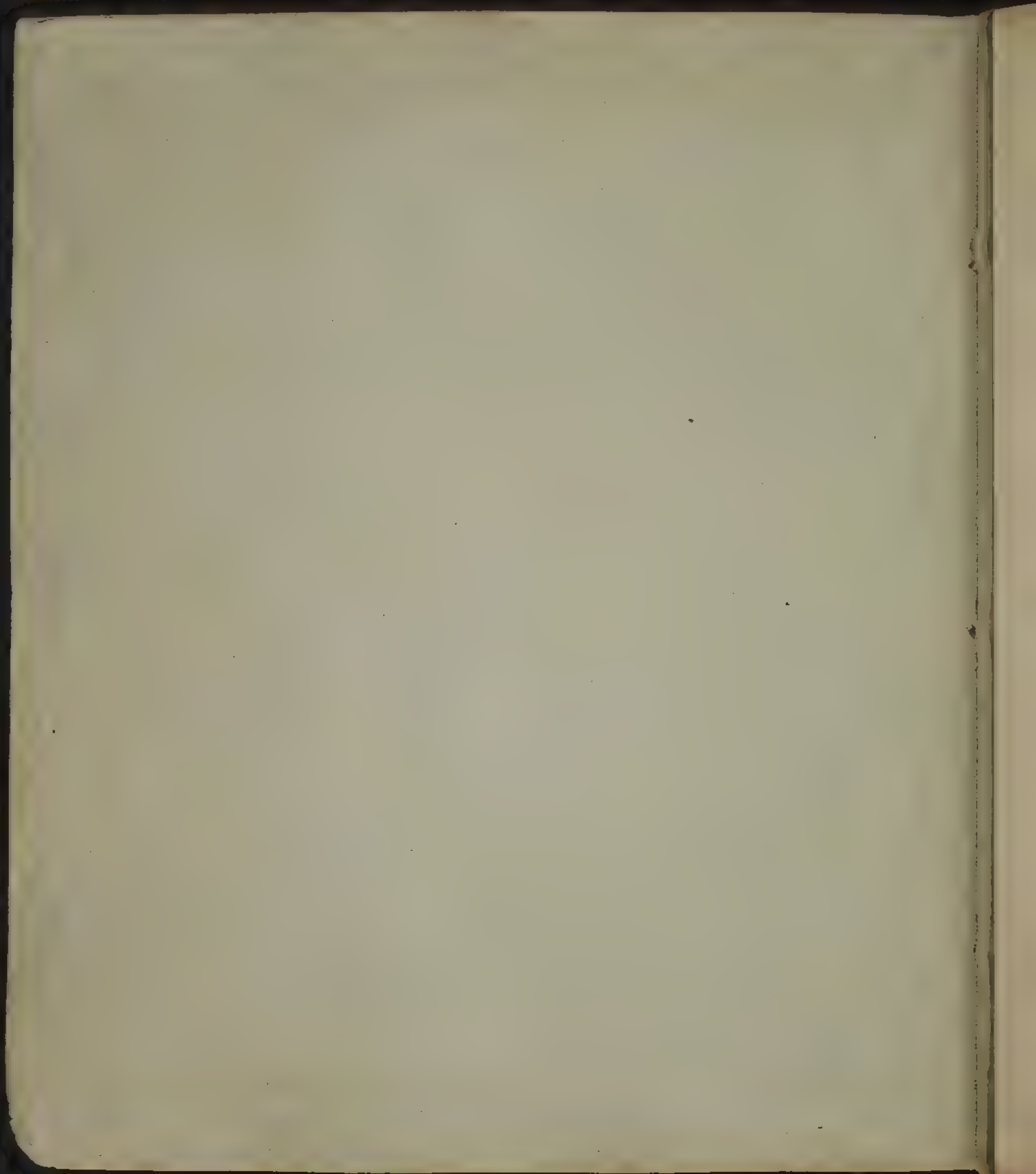
If your endeavours are deficient, it is in vain that you have tutors, books, and all the external apparatus of literary pursuits. You must love learning, if you intend to possess it. In order to love it, you must feel its delights; in order to feel its delights, you must apply to it, however irksome at first, closely, constantly, and for a considerable time.

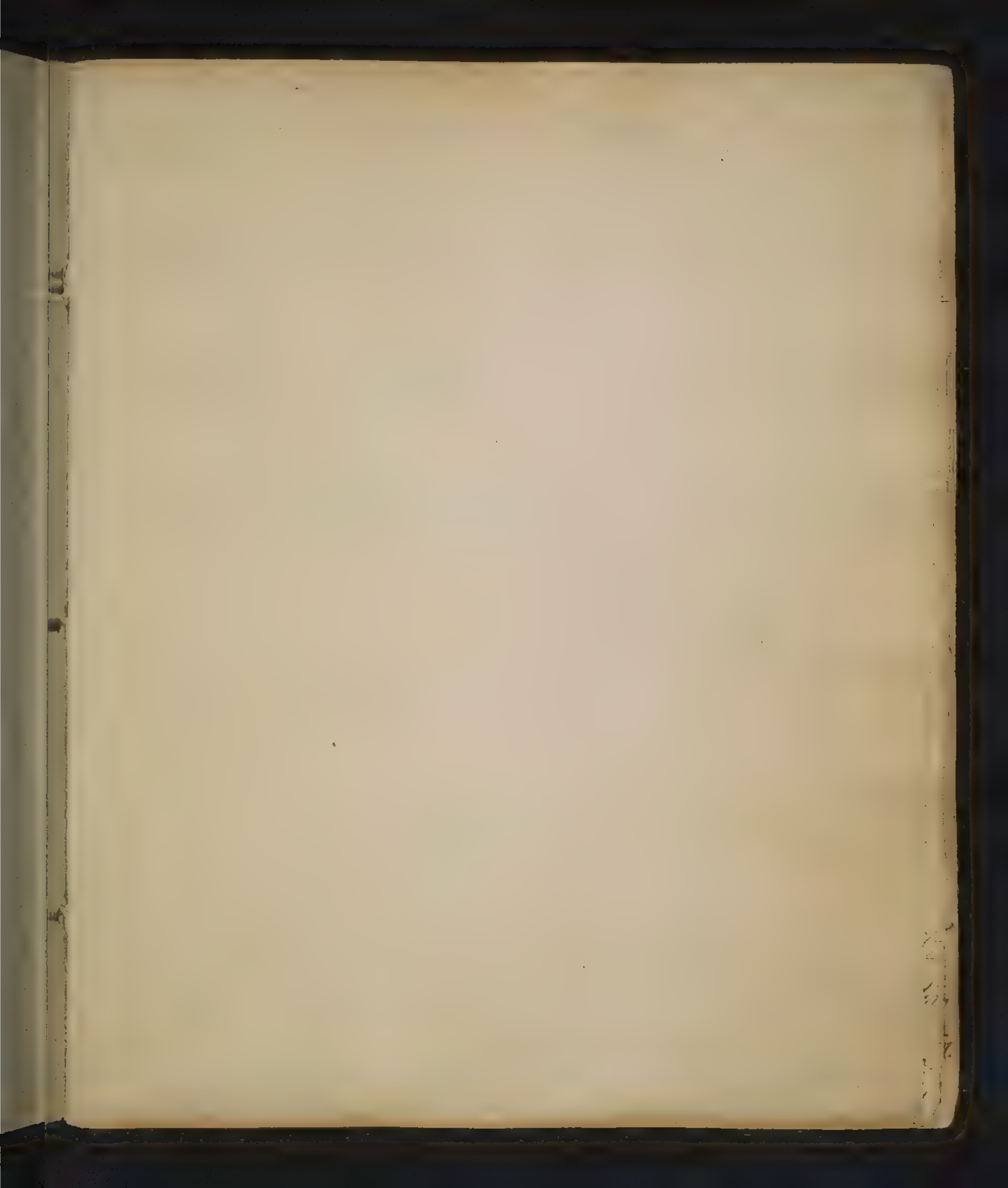
Pleasant, indeed, are all the paths which lead to polite and elegant literature. Young, then, is surely a lot peculiarly happy.—Value duly the opportunities you enjoy, and which are denied to thousands of your fellow creatures.

Without exemplary diligence, you will make but a contemptible proficiency. You may pass through the forms of schools—but you will bring nothing away from them of real value.—Your instructor may, indeed, confine you within the walls of a school, a certain number of hours. He may place books before you, and compel you to fix your eyes upon them; but no authority can chain down your mind.

That learning belongs not to the female character, and that the female mind is incapable of a degree of improvement equal to that of the other sex, are narrow and unphilosophical prejudices. The present times exhibit most honourable instances of female learning and genius. The superior advantages of boys' education, are, perhaps, the sole reason of their subsequent superiority. Learning is equally attainable, and, I think, equally valuable, for the satisfaction arising from it, to a woman as a man.—*Knox.*





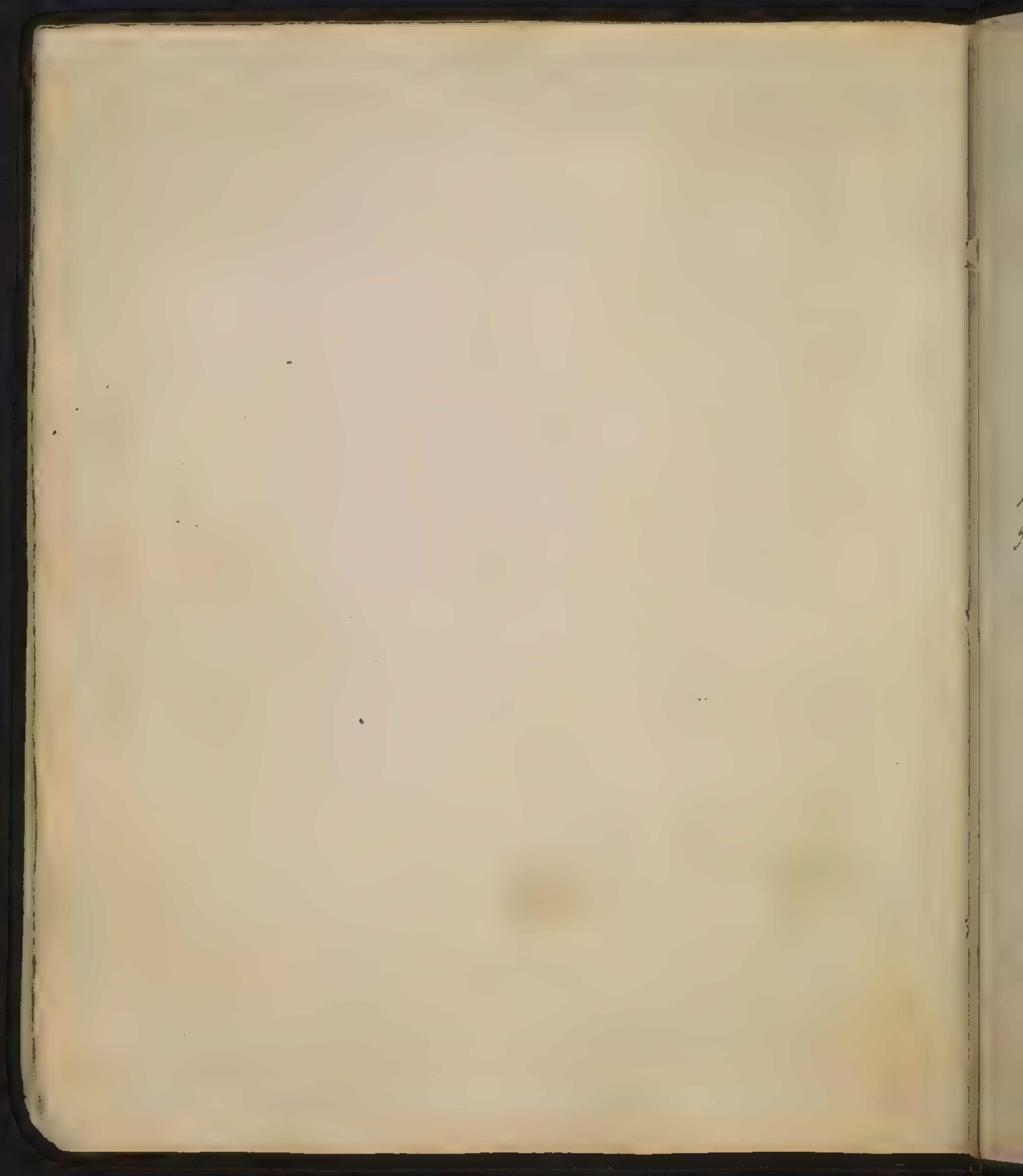




Section 7.th
On waters.

There is but one simple, original, and pure water; all variety in waters being occasioned by impurities received from a mixture with foreign matters; and these are visible, or invisible.

1. Visible — at certain seasons of the year, after a shower of rain has fallen, we often perceive the waters to be covered with a yellow scum, and to emit a strong sulphureous smell: this is produced by a yellow powder, ^{called pollen,} contained in white lilies and other vegetables, which being tossed about by the winds, and carried up in vapour, condenses, and falls with rain. —
 2. Another cause of the variety of colour in water is sand at the bottom; where water is not very deep, it will appear of the same colour as the sand; hence, the red appearance of the water, in the red sea, from red sand at its bottom.
- Waters



3. Waters frequently receive ² their apparent colour from a mixture of small animals, which are sometimes invisible to the naked eye, but may be viewed by the assistance of a microscope. Pison, in his voyage round the globe, found a part of the South sea red as blood; which, upon examination, appeared to be occasioned by innumerable swarms of small red animals, mixed with the water.

11. Water receives a green colour from vegetables, growing therein; these, in stagnated waters, produce a green scum on the surface, and are extremely serviceable, in ~~preventing~~ ^{correcting} the noxious vapours which arise from the ~~from being inhaled, and rendering our air~~ ^{water.} foul and unwholesome, thus good arises out of evil — or rather, what is a seeming evil, is a real good —

Invisible causes of water's impurity —

1. Salts — almost all ~~xxx~~ waters contain a considerable quantity of salt. I have extracted no less than two grains of salt from a quart of

2

3

+

4

the ^{purest} common pump ³ water, in Philadelphia—
common salt may be detected in water by lu-
mar caustic; for, on adding this ingredient, the
water becomes muddy, and a decomposition
immediately takes place. The nitrous acid, of
the lum. caust. uniting with the alkaline salts,
of the ~~water~~ common salt, & the muratic acid
with the salt of the silver.

2. Calcareous earths are frequently the cause
of impurity in water.

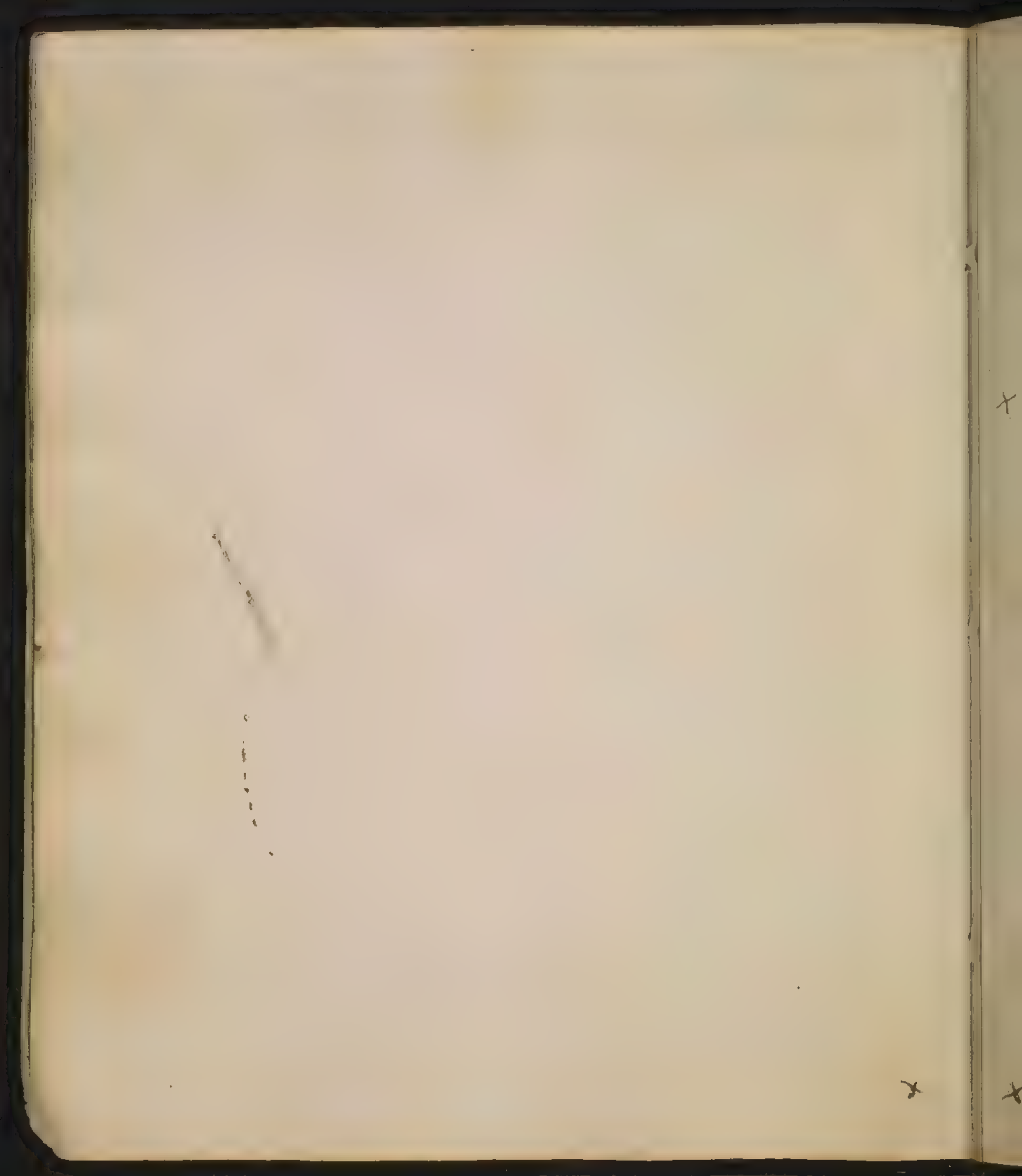
3. Metals, especially iron, occasion a change in
water. Chalybeate waters are much impregnated
+ with this metal. — Iron may be detected
in water by astringent vegetables, ^{such as oak galls} which will
change it to black, as oak galls. —

4. Fixed air. Geymont water abounds with this,
and is also impregnated with iron; this water
is used in medicine against complaints in
the stomach; it serves, instead of yeast, for bak-
ing; it has an acid brack taste; during the
late war the troops stationed at Saratoga
used



used pyrmont water; ⁴procured, from a spring
in that neighbourhood, both for yeast, and
as a substitute for rum, of which they were
destitute; they became very fond of it, and it
is said, ~~became~~ ^{were} intoxicated by drinking it.

Artificial pyrmont water ^{is often} ~~may~~ be made, by adding
fixed air to common water; the fixed air may
be obtained from any calcareous earth—thus,
in a machine, for this purpose, there is a lower
part, which serves to hold the marble dust, or
body containing fixed air; the vitriolic acid be-
ing added to this, a decomposition, with an ef-
ferescence, takes place; and, the fixed air escapes,
thro' a small aperture, into the upper part of
the machine, which contains the water; to
this it soon imparts its virtue; the aperture,
thro which the air escapes, is so small that
no water can pass from the upper, to the lower,
part of the machine—A rusty nail, thrown
into the water, along with the fixed air, is also
of use, ~~to~~ in communicating the taste of iron to it.



5
The lightest, and purest, waters are rain, and
snow water — next to these is river water, which
is better than spring ^{or pump} water for boiling vegeta-
bles; these pure waters, being soft, are also fittest
for washing; they produce a lather with soap,
which very impure water will not do: — hence,
x the purity, or impurity, of water ^{is} discovera-
ble, by means of soap — the same may be
known by means of a hydrostatic balance,
which tries the purity of water, by weighing it.
In wells, or pumps, where the water is suffered
to stagnate, it takes in foreign matter and
becomes very impure — hence, the water of
pumps, which are seldom used, is much worse
than that of pumps ^{from} which great quantities
of water are taken — by undergoing a
greater stagnation. Pure water contributes much
to health, and longevity — How pleasant then must be
that pure water, of new Jerusalem, clear as crystal, &c!
x which is made mention of in scripture

7

+

1. Common air, of which our atmosphere is composed, and is about fifty miles in height; of this air we breathe a gallon in a minute; It has elasticity, and weight; every square inch on the surface of our bodies supports no less than fifteen pounds of air: thus we are enabled to support, by the means of ~~our~~ ^{the} internal ^{in our bodies} air, which resists the pressure of the external air.

By the assistance of a hygrometer, we are enabled to discover the moisture of the air; and, by means of a barometer, we may know its weight. These immediately indicate any approaching change in the weather.

2. De-phlogisticated, or ^{empirical} pure, air. This is air perfectly freed from phlogiston, and is the purest of all air. $\frac{1}{4}$ or $\frac{1}{5}$ of all we breathe is pure. This pure air abounds in, and is secreted from vegetables; it also abounds in red lead, and in saltpetre. This pure air gives a redness to the blood; and is extremely exhilarating — hence the highest co-



7
sour blood is found to flow in the veins of
those, who breathe most of this air—hence also,
salt petre imparts a fine red colour to hams &c.
Animal life ^{exists} is five times as long in this as in com-
mon air—hence, the advantage, and refreshment,
of trees, and other vegetables, near our dwelling
houses; and of frequently walking in gardens,
planted with flowers, and other fragrant herbs.

So enlivening is this air that, according to Milton,
Satan himself was, for a moment, exhilarated,
by breathing the pure air, ^{near} the garden of
Eden—The antediluvian air was exceedingly
pure, perhaps, entirely dephlogisticated; there were
then no marshes, fens, nor lakes of stagnant,
and putrid, water; to emit fogs, and exhale
noxious vapours—Hence we may easily ac-
count for the surprizing longevity of men
before the flood—The new Heavens of which
we read in the book of revelations means no
more than a new atmosphere; that is one



consisting entirely of pure air. This, like the pure water, will ^{probably} contribute to the health, and pleasure, of the inhabitants of the new Jerusalem.

+ 3. Inflammable air. This sort of air is extremely light and inflammable - hence it has a tendency to rise upwards; and raises balloons to an enormous height. It is procured from iron filings by ~~the~~ means of the vitriolic acid - Fire-damps in mines and caves is owing to the presence of inflammable air; this is capable of being set on fire by the blaze of a candle, &c. not by sparks - On the contrary, gunpowder, which abounds with fixed air, cannot be set on fire with a blazes but, may, by a spark.

4. Phlogisticated air, or air charged with phlogiston. It is produced - 1st from fire, as in ~~some~~ ^a close room, where people are so ignorant of its ill effects, as to burn charcoal &c. without any chimney, or other aperture, to admit a supply of fresh air. in such places it has often proved fatal; for

9
Introduction

I come now to deliver ^{to} you agreeably to my
promise a few lectures upon the application
of Chemistry - Nat. Philosophy - Medicine &
Astronomy to domestic & culinary purposes.
- This is an important part of Science,
and absolutely necessary to a physician.
It includes many things that are essential
to the preservation of health, & the prevention
of diseases. It bears for its object, the convenience
& pleasures of life, and these ^{sh'd} come under the
knowledge & direction of a physician. ~~for~~
~~the defect of~~ ~~see~~ ~~& then~~ They will serve to
extend the empire of our Science, & to
~~also~~ increase the dignity & influence of
the Medical Character.

for phlogisticated air ^{1st} will neither feed flame
nor support animal life. 2^d air becomes phlo-
gisticated by the breath of animals; and this air
is by no means safe to be breathed again, until
it has been purified, by mixing with fresh air.

5. Fixed air, which abounds in calcareous earths, as
lime, marble &c. from these it may be separated
by the nitric acid. This air abounds also in
cellars &c. to which fresh air has no access - it is
extremely dangerous to go into cellars where this
air is found - a person, going into such places,
should hold a candle before him; if it burns
clearly, he may venture in, with safety; but
if it is extinguished, or burns dimly, he should
start back instantly; otherwise, he is in the most
imminent danger - a chimney in a cellar ef-
fectually prevents the bad effects of this deadly
air, by furnishing a constant supply of fresh
air. In some places this air arises from caves
in

Man ^{came} ~~was~~ originally into the world
like the ~~beasts~~ beasts of the forests - but under
very different circumstances. His weakness
rendered a shelter necessary for him from
the inclemencies of the weather, and his
innumerable duties - Obligations - Inclinations
rendered ~~certain~~ form - convenience - &
pleasure necessary for him in the construction
of this shelter from heat - cold ^{wind} - moisture.
~~and to the first necessities~~ ^{to the} & philosophy
were first employed in the construction,
^{of a house}
~~of this~~ therefore shall be the subject of our
first lecture.

in noxious vapours: from a ¹²pit, called the
grotto del cane, near Naples, in Italy, there
is a constant exhalation of this air, which
kills every dog that approaches near to it,
for as it seldom rises more than a foot
or two from the surface of the ground, it does not
affect animals that can breathe above the
height of the air.

Upon fixed air, in the charcoal, used in making
gunpowder, depends the explosion produced by
its catching fire. And it is also the basis of
the pulvis fulminans, or thundering powder.

This is sometimes used, in theatrical amusements,
to produce an artificial thundering &c. It is
composed of three parts of nitre, two of the dry
alkali of tartar, and one of sulphur, ground to-
gether. If a ^{small} ~~little~~ quantity of this powder be laid
on an iron plate, and slowly heated, it will
explode, when it arrives at a certain degree of heat
with astonishing violence and noise - owing to the



the sudden escape of fixed air, from the alkali.

+

W

Lecture 8th 13

Having finished ^{our} general principles we come to ~~their~~ ^{your} application. — Considering how much duty and necessity conspire to confine a lady to her house, its convenience is of great consequence to her. I shall begin ~~therefore~~ ^{with} ~~with~~ ^{an account} Of the direction of a house.

+ In many parts of Europe, especially in Great Britain, dwelling houses are, generally, placed East and West. We, accustomed to adopt every European fashion, and custom, whether suited to our convenience, or not, we have been too ready to follow them in this; for, however proper this direction may be, in the temperate climate of Great Britain, it is by no means adapted to the extremes, of heat, and cold, which we experience in this country. —

The most convenient situation, for our climate, is to have our houses North and South; with the front to the Southward; the advantage of such a direction, in winter, is obvious to every person. —

It may be objected that we ¹⁴should be exposed to the scorching heat of the sun in summer; if this even were to be the case, the fine southerly breezes, which generally blow at this season of the year, would more than make amends for the other inconvenience; but the sun's beams may be kept off, in a great measure, by awnings or by a piazza - Should be defended by trees from exhalations. Materials.

The materials used in building houses, are - Wood, in logs, or in boards; stone; bricks; ^{and} mud, called in England Cob's & marble; - of these the most durable is stone, as not being easily destroyed by fire &c. next is brick &c. —

But, since one great point to be considered, is, how to render a house wholesome and comfortable; and, as this can only be done, by using such materials as may prevent damps, by absorbing the moisture; no material, in this country, is preferable to wood, for that purpose; it being very absorbent —

Stone

+ when plastered, the moisture is precipitated
by the cold, & settles on the wall -

+ Crowded rooms unhealthy especially
with candles, & why - from phlogisticated
Air:

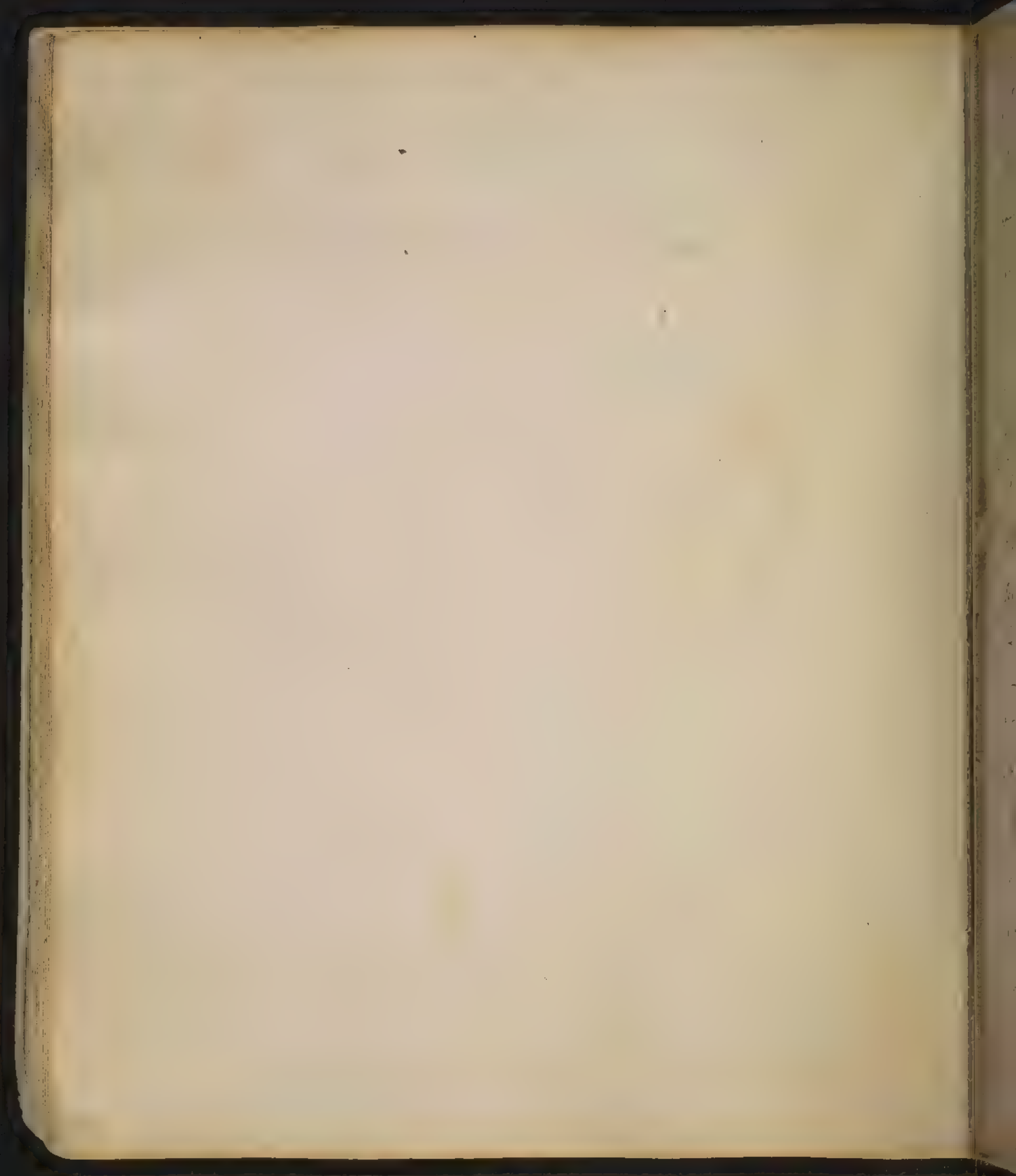
15

Stone also absorbs moisture as may be proved by weighing the same stone, both before, and after, it has been ~~used~~; the same may be said of bricks; but it is to be remarked that a wall composed of any of these materials absorbs most moisture, when neither plastered nor painted. + In some parts of England &c. houses are built of mud; and are extremely wholesome, this being warmer, and absorbing more moisture than any of those we have mentioned. The mud is made into large lumps called cobs. Cool in summer, & warmer in winter.

+ Besides the direction, large rooms are ~~very~~ comfortable (in winter, the draught of cool air is less felt, having a larger space to act in) & in summer too great a ^{collection} combination of heat is prevented. + Windows and doors are to be placed opposite to each other, to attract a current of air; the windows contrived so as to open both at top and bottom; that, while the heated air goes out at ^{the} top, cool air may ^{be}



be admitted at ^{the} bottom. ¹⁶ Every house should have an entry or passage completely thro' it, from front to rear, if possible. Where houses can be built upon a rising ground it is to be preferred. ^{18 inches} a space between a double wall - ^{useful} - Thick walls, ^{great} ~~repel~~ ^{repel} heat best. A shed, or piazza projecting from the roof, is comfortable during the heat of the day. Trees planted about our houses are of ^{great} ~~infinite~~ service; but, if they be planted too thick, they will occasion damps and exhale noxious vapours at night; they should also be exposed to the sun. - These are useful for the shade they afford, and for the cooling evaporation, which proceeds from them. - They absorb impure ~~air~~ and discharge pure air. Summer houses, open all around, with sheds from their roofs, are very cool. The windows and shutters are to be kept close ^{but open from 7 till 10 or 11 o'clock.} while the sun shines upon them. In apartments where there are no windows opposite to each other fresh air may be admitted by a ventilator, placed in the door, ^{which}



17.
is an instrument so contrived as to furnish a supply of fresh air while it suffers the impure, or heated air to escape. ^{a wear is dash} A high ceiling promotes coolness in suffering the heated air to rise above ^{the not stagnate of windows. or opening even to it.} us. The most comfortable place in a room is near the chimney; for, from 8 or 9 o'clock in the morning to 5 or 6 in the evening, there is a current of air setting downwards; and from 6 to 9 ⁱⁿ the morning it sets upwards. — This is owing to the air of a chimney always having the same temperature; hence ~~it~~ when the air ^{is} warmer above & below than the air in the chimney, it descends by its weight; but when the air above & below is cooler, as in the evening & night, the air in the chimney being lighter ascends. A floor of earth, bricks, or marble gives coolness. — There is a curious fan, invented by Mr. Bram, with which a lady may keep herself cool, while sitting in her chair, by the motion of her foot only. — By night — Matrafes are cooler than beds: those made of leather are coolest. — Either beds or matrafes are cooler if large; because a person may move to the coolest part.

To be bro't under trees
cooling the body by

+ Bring ~~in~~ cool drops. 1 allowing garments -

(b) white hat w: ^{the} black or green lining + 2 hand.

= perching in the hat. 2 sitting still - 3 sp² of

wine to the ears. 4 a narrow entry. Bring in

here the directions of the humane Society, & add

to them Mr Mittenhouse's fact - recovered ~~by~~ from

the languor & want of appetite occasioned by

by excessive heat & fatigue by eating a raw

Onion.

18

Bedchambers should always have a chimney, which, ~~in summer~~, promotes a circulation of fresh air. The chamber doors may be left open; but that dangerous practice of opening windows ^{at night} is to be strictly guarded against; for they ~~admit~~ ^{admit} noxious air which arises from fens, marshes, stagnant waters, streets &c. besides the weather may change while we sleep — hence the numerous train of intermitting fevers &c. in Philad.^a in autumn. Kitchens should likewise always be provided with chimneys for reasons already given.

To promote warmth in winter — thick walls, and a low ceiling are very useful; also tiling carpets for the floors &c. ^{upper back part of the} The fire place should project from the wall; and ought to be small with iron backs and sides kept bright to reflect the heat — Closets are best at some distance from the fire; if near it, they should be ^{when we sit near them} kept open, to prevent a supply of cool air coming from them. Raising the feet above the floor; sitting high, and

† It is remarkable that in climates like ours
we suffer more from cold than they do in Canada
or Russia going to the ^{many} conveniences & arts that
are practised to guard against it.

~~From~~ 6 hours end for sleep - 2 years gained in
this way.
+ With all the advantages of warmth obtained
from ^{the} beds - covering - & the form of a room,

it is sometimes difficult to sleep. This is
occasioned 1 by cold feet. To remove this,

we should either jump out of bed, & stand
a few minutes on a cold hearth - or 2nd

Thrust our feet for a few minutes out of bed,
or into a cold part of it. or 3rd have a bottle

or jug of warm water well corked placed
next to our feet in the bed during the night.

† Sleep is prevented by ^{or an accumulation} an obstruction of
perspiration causing restlessness & tossing from

+ Side to Side. This disease is called the Cruels.

It is cured & Sleep Obtained, by 1st jumping
out of bed, & walking once or twice about
the room, or 2nd by exposing the bed cloaths to

19
before the fire; also to have screens behind our
chairs, are all serviceable to promote warmth.
At the side of the fire is the coldest place, because
of a constant supply of cool air coming along the
walls to the fire - In France they keep a
large quantity of ashes on their hearths, which
retain the heat - By night, a blanket un-
der the sheet, and a bed for a covering are
* useful; curtains should not be too close, if used
that are prejudicial in causing us to breathe the same air
at all. A fire in our bedchambers is liable
to this inconvenience - that it falls away in
the course of the night - when the air
gets cool, and we are very apt to catch
cold. + Bring in here page 25 of floor.
Of fireplaces - stoves &c.

Fire places, as has been mentioned already, ought to
be ^{in the middle of the room} small projecting from the wall, that they
may the better diffuse their heat to the distant
parts of the room.

Stoves are open, or close - The open stoves here
are

fresh
the air which have been filled with our
perspiration. 3 by two operations - as in Mr Armstrong
= ted by anxiety of mind, or a succession of
new subjects of reflection. In this case, it is
to be sought for 1st by confining the attention
steadily for some time to one subject - or 2nd by
counting 100, or 200 backwards, or 3 by think-
ing upon the virtues of a living or departed
friend. - go to Vol: 3, p 50.

- pies
+ ~~potatoes~~ - fruit - bread & ^{vegetables} as potatoes &c even
meat - ^{can} be baked in them ^{expediently}
to great advantage. - Teapots will ^{be} boiled on
or in them by first ^{setting} ~~pouring~~ the teapot on
a spoonful or two of water ^{in the water} & setting heat,
and end terrible.

are the Franklins, and ²⁰ Rittenhouses; these are
excellent for reflecting a much greater degree of
heat, than could be obtained from ~~the~~ fire places
whether lined with clay, bricks, or plates of iron—
besides, that this superior degree of heat is obtained
from a much less quantity of fuel.

Close stoves are of various sizes & constructions from
8 to 16 plates—The templated stoves have a
sort of oven in their upper parts, in which cook-
ing of ^{various} ~~cases~~ kinds may be performed—There are
more useful ~~xxx~~ than any of the others; for a
greater heat is diffused by them, tho; at the
same time, 5, or 6, of the fuel will suffice.

Thus it is that the industrious Germans in this
country make ~~another~~ saving, of at least £200
^{in the course of a life time} ~~a year~~ in the article of ^{labor—} fire wood—There is a
peculiar advantage attending the use of close stoves:
and that is,—a pipe, or funnel, may be carried
across a room, into an adjoining one, or, through
the ceiling into a bedchamber, or other apartment,
above stairs, any of which it will warm sufficiently.

+ It has been remarked by Strangers that they suffer more in our winters in Philad.^a than they ever suffered in the winters of Canada, or even Russia. The reason is plain. In those cold countries, ^{where the winters are long,} provision is made by furs & stoves against the cold. In our State, the extreme cold weather is of so short a duration that we neglect to guard ourselves against it by such conveniences.

- The present fashion of having large rooms & entertaining ^{large companies} will make stoves necessary in our Country. - They cannot be heated without them so as to be safe or comfortable. The sooner therefore they are adopted the better. -- + p:27

The fuel used in this Country consists chiefly of wood. Hickory & Oak are chiefly employed for this purpose. The best fires are made of hickory, ~~but~~ and it is said there is most economy in burning it provided it is not too dry. To prevent this, it should

It has been objected, that these stoves afford a disagreeable and unwholesome heat - I am induced to think the contrary - they are certainly useful in diffusing warmth to every part of a room; and cannot prove injurious, where they are not over-heated, and, where there is a funnel to emit the heated air: the Germans, who use them throughout the winter, are observed to be a remarkably healthy people - ⁺ subject only to Dyspepsia from too much labor & a Vegetable diet.

Lecture, 9th
of smoky chimnies.

Smoky chimneys are extremely disagreeable - smoke inflames the eyes - darkens the complexion and hurts the temper - It stains the furniture, ceiling, and walls, of a house.

Smoke has some weight and will not ascend easily, unless carried up by rarefied air - hence on dull foggy days, in winter, when the air is condensed, we see smoke, instead of ascending, frequently rolling about in sluggish clouds.

hence

not be kept in a cellar, if purchased in the summer. Hickory fires are ~~adventurously~~ necessary for the purpose of cooking to advantage. Split hickory is apt to throw out sparks. To prevent this - take care that the log lies on the fire in such a manner as to throw its sparks upwards & downwards only - for the ^{air} ~~wind~~ which occasions them comes from between the bark and the wood. -

In making a wood fire - contiguity - convexity - & concavity are all three necessary. Where they cannot be otherwise obtained - small pieces of iron thrust in between each piece of wood has been found to be very useful. - An iron bar is useful in preventing the rolling of the wood on the ~~hand~~ - irons. -

The warmest & most agreeable fire is made of a mixture of wood, and large coals. This mixture is particularly useful

hence, also, rooms are ²⁴sometimes smoky before the fire is completely kindled; but, a large fire hurries it up, because of the rarified air its heat produces —

Smoke is occasioned —

1. ^{By ~~the faultiness of~~ the tightness of} ~~new~~ ~~material~~ new houses, preventing the access of a sufficient current of air; this, in Europe is cured by a ventilator, or moveable pane of glass, in the room-door, which admits a sufficient supply of air.
2. When the funnel, or fire place, is too large, the air is not sufficiently rarefied to carry up the smoke — It should, therefore, be contracted to a proper size; the best method of discovering this size, is to take a piece of pasteboard the height and width of the fire place; by closing it with this, and cutting a small hole in the pasteboard trial may be made whether it will then draw or not; if it draws the size is

in cooking. —

A Lin, or steel fender should be used to guard against the danger of the fire's falling or sparks flying into the room after the fire is raked up at night. —

Fire in a room or of cloaths — how extinguished? By stifling it — fact at sea commd. by Maj. Thorne. — V

— Houses made cold by ^{flues} pipes being grooved, & connecting pieces cutting — hence sailors over cellars so cold. pipes sh^d be placed close, & lath ~~be~~ between each pipe below — & over it plaster. —

✓ Shall now add a few directions to prevent either disagreeable or fatal effects of cold heat on the body ~~at~~ in all places. —

1 of cold — 1 ^{or Cotton} warm — woven ^{or flannel} dress — 2 ^{or flannel} exercise — 3 Keeping the feet warm — large shoes — cork soles — lanuap — & salt — Indian practice — Govt Vandeyke's B^d.

is obtained; if not proceed ²⁶ to cut away more of the pasteboard untill you have gained your end; and then contract the fire place to that size — here, it is to be observed, that the width of chimneys is to be varied, in proportion to their heights — therefore, chimneys in upper rooms should be smaller than those in lower rooms — as they are lower

3. Shortness in the funnel often occasions smoke if the funnel cannot be easily lengthened, contract its width —

4. Two chimneys, where they communicate, are often smoky; there not being a sufficient current of air for both — In this case, one of them must be closed altogether.

5. ^{neighboring} Tops of houses, or a hill, rising above a chimney, ^{may} turn the smoke downwards by the wind blowing ^{directly} ~~down~~ upon it; as a cure for this, a turncap covering above and on three sides is used —

But

5 The fast of Isaac. —

1 Setting still — in a shade
2 Heat — 2nd Cool — flowing drip — 3 White
hat — living not in contact wth it — on
a white cloth —
handkerchief in it. 4 Sp² of wire to
the cars. 5 Exciting sweat — walking down a hill.
6 Eating an onion — by
Mr Bitterhouse — of actual injury.
Warm position — fresh air — not
too strong a current — 7 The hypn² best
fortified by the daily use of the cold bath.
90 p 47 of Vol 3.

+ In a summer's day the heat in St Paul's
Church London was 62° — in ~~the~~ a common
house 70° — 75° in the shade & 80° in the
sun. In only 10: 43.

But a better method is to raise the chimneys where it can conveniently be done.

+ 6. A door placed too near a chimney gives too great a supply of unwarmed air; which causes the smoke to be thrown about the room. The door should be moved; or, at least, the hinges turned next the fire.

+ 7. ~~Smoke~~ from a stack ^{of chimneys} coming down - here a slider must be used to close it entirely.

+ 7th. It will be found, for the most part, that the smoking of chimneys is owing to their being carried up narrower near the top, than below; or zig-zag, all in angles - If a tapering chimney be very high, it is ten to one but it will smoke. The air in the ~~chimney~~ being rarefied, is forced into the funnel ~~of the~~ chimney, and receives from the fire an additional force to carry up the smoke. Now, it is evident that the higher the smoke rises, the less is the force that drives it, the slower



28

slower it must move, and consequently the more room it should have to move in — therefore, a chimney should be carried up perpendicularly and rather wider above than below.

Of Fire in chimneys.

Every prudent person, will endeavour to prevent this, by having his chimneys frequently swept. This might be done by pulling a bundle of straw up and down the chimney, by means of a rope, without suffering boys to undertake a business so degrading to human nature. — If a chimney, nevertheless, should catch fire, the best method of extinguishing it is to prevent the access of air by shutting the windows and doors close, and by stopping the fire place, effectually, with a wet blanket. — Or, half a bushel of salt may be thrown into it; by melting, the alkali will separate from the acid, and glaze, vitrify and calcine the inside of the chimney as it does stone ware &c. — Or, by concussion, as, by firing a gun into it.

+ The Sweeping of Chimneys is rendered unnecessary & all dangers from their catching a fire, by glazing their inside by means of Salt ~~is~~ thrown into a large fire as soon as it is built. It becomes so glazy in consequence of this, that no soot will adhere to it. — It has been tried I have heard with success in our country.

provided it is ~~per~~ thoroughly dry, otherwise we accelerate its decaying by confining its moisture. —

24

In order to guard against fire, in houses, at night,
it is necessary to shut the doors, windows, &c. close,
~~in order~~ to prevent the access of air, which is
the great supporter of flame — Mr. Fisher's
fact. — +

Vaults and Cellars have always an equal
temperature of air — hence a cellar is the best
place to preserve wines &c. in summer, and vegeta-
bles in winter. Cellars with chimnies keep victu-
als from moulding, by promoting a circu-
lation of air. Danger from aerial acid. None known.
to! As former. Bath.

Preservation of the wood &c. of a house

Wood is preserved, by letting it ^{perfectly} dry, before building.
else its moisture ferments ^{in,} and rots, it — painting
is useful to prevent its absorbing moisture, it
will last five times as long, when painted as
it would otherwise. — Posts which are to be
placed in the ground, or beams in building, are
better to have their ends burnt, or covered with
resin, before they are used.

+ Great care should be taken not to sit,
or sleep in room that has been washed,
till it is perfectly dry. ^{Salubrious} ~~Cold~~ and fevers
have often been produced from neglecting
this precaution. — also not to sleep in a
room recently plastered — Vanswieten tells of
a palsy from it, & Dr B Morris got a Consumpⁿ
from it.

30

Walls are preserved by plastering, and weather
boarding. which keep the walls dry, by preventing
the access of moisture. Roofs preserved by painting,
when wood - But tiles best. ~~But~~
Of rendering a house clean & wholesome.

This is a most essential part of good housewifery
and cannot be too much attended to - Washing
frequently in a warm season is very conducive
to ~~both~~ cleanliness, and, consequently, to health. -
(So generally is this practice approved of, that, in
this city, one day in every week is set apart
for it) - Plastering, and whitewashing, are extreme-
ly necessary - The celebrated Mr. Howard, who
has visited a greater part of all the prisons in
Europe, with a view to ^{point out the means of lessening} comfort, and ~~relieve~~ the
^{human misery} ~~sufferings of the unfortunate~~, remarks that
in those prisons where whitewashings were per-
formed two or three times a year, diseases were
rarely found. - Opening windows in the day-
time discharges impure air - Ventilators are
very

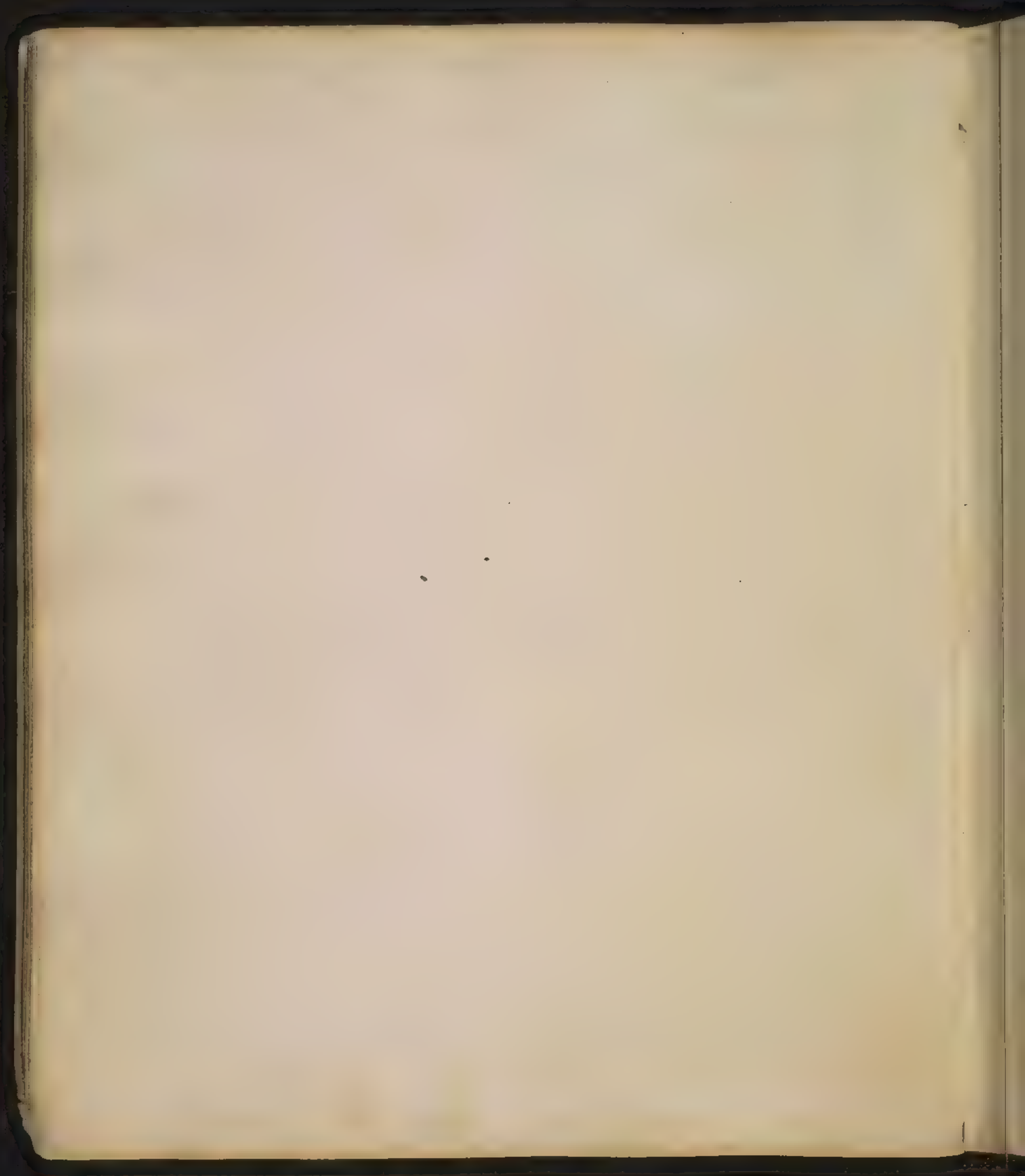
Dr Rogers relates a fact of ~~several~~ cabbage
leaving one produced a fever at Oxford
from putrefying near ~~to~~ one of the Colleges.

x providence having made these animals which
^{& men} inhabit stables neighbouring to each other, he has
kindly prevented any inconvenience ^{or disease} from
their being so near each other. -

very necessary, for this purpose, especially, where many people are assembled together. — Offal matters, especially, the refuse of vegetables, should not be suffered to remain near a dwelling house; these, when putrid, emit very noxious exhalations.

A Ship sailed from England to Portola, thence she returned to England; and made a second voyage to Portola. during all these voyages a quantity of potatoes were suffered to remain in her hold, which by this time were completely putrified; and, of ten sailors, who went down into the hold, ^{contracted fevers of which they} nine ~~more~~ ~~contracted~~ ~~died~~; owing ^{all died} to the noxious effluvia of the putrid potatoes.

The effluvia of stables, however, seems to be an exception to these remarks. — When contagious distempers were raging in different parts of this city, the people who lived near stables have been exempted from sharing in the general calamity. — The ~~breaths~~ ⁺ of these animals, also, is wholesome; whereas, that of human beings is exceedingly impure.



32
To prevent, or destroy insects &c.

Insects doubtless were designed by Providence to answer some useful purposes. I certainly it is that they are standing monuments of the fall of man: they tell us that we have forfeited our right to the earth, and that, while we are in this world, we are in an enemy's country. They serve ~~also~~ to exercise our humanity, and patience: and to promote cleanliness. — Whenever they injure us, however, we are justifiable in destroying them, by the principles of ~~man's~~ self-preservation.

Mosquitoes are produced from stagnant waters, rain water kept for washing, in vessels, in our yards, is very apt to produce them — the vessel should be covered — or a few fishes put into the vessel will feed on them and their eggs. —

Flies are the offspring of filth — hence they abound most in dirty houses, where they are very useful, by consuming impure matter, which might cause diseases — They are also food for singing birds — They feed on fruit, and are found in swarms where

† They may be drove out of a bedroom
by a napkin - or kept out of it by
keeping the room
~~dark~~ during the day.

33.
where there are many fruit trees — The best method of destroying them, is to put some molasses on a board, to which they will repair in swarms; a little gunpowder exploded under the board will destroy them — [They are sometimes poisoned, by mixing fly stone in water. H. G. +]

Bugs, which are so troublesome about our beds, in the summer months, are best prevented by cleanliness — some paint their bedsteads, and place the bed posts in plates of water — but, it is better to wash the bedsteads with a solution of salt and water, boiling, which will destroy them effectually — for they cannot live a moment in salt.

^{this solution}
~~this mixture~~ also destroys worms in children.

Decoction of Stramonium likewise powerful.
Rats and mice are, frequently, found in old houses; they, therefore, hint to us that our houses stand in need of repair — They may be destroyed — 1st by traps, which take them either alive, or dead; every humane person will prefer the latter, as it prevents the disagreeable task of putting them to death ourselves —



rats & mice; 224
2. Cats destroy ~~vermin~~; for this purpose they should be fed very sparingly, as they hunt best when hungry.

3. Rats are sometimes poisoned with arsenic, or ratbane; this mode of destroying them should never be practised - it is extremely dangerous to children, who may come at it, and poison themselves; besides, the effluvia of rats, that die in their holes is very noxious, and never fails to taint a house. —

If humanity revolts at putting them to death, we may rid ourselves of them; by banishing them thus -

1st Catch one alive, hang a bell round its neck, and let it go - they will all immediately be terrified, and quit the house. or

2^d They may be banished, also, by shaving or singeing the hair off one of them -
of lightning and thunder.

These are synonymous terms for one and the same thing - when near, ^{there is} no perception of time between them, and the reason of seeing the flash at other times

+ "and harmless all your thunder views,
" ~~and~~ By sticking to his point.

+ The King of Britain placed conductors ^{the} w:
balls on his stables in London during the
late war, but upon hearing that a house
had been struck by lightning with these newly
invented balls, he instantly took them down,
& replaced them with sharp pointed conductors.
upon which the following lines appeared in
a London newspaper.

" While you Great George for trifles hunt,
" And sharp Conductors change for blunt,
" The Nation's out of joint;
" Franklin, the wiser plan pursues, +

times before we hear the noise of the explosion, is that
the motion of light is almost instantaneous; whereas,
sound moves only at the rate of 1142 ^{feet} in one se-
cond of time (according to Sir Isaac Newton). Thunder
is occasioned by two clouds, called plus and minus - or
+ the greater and the less; the former greater in ~~heat~~
ⁱⁿ electricity than the latter. When these clouds
come near to each other, the lesser, by the principles
of an equilibrium, attracts the electric fire of the other;
which occasions an explosion, of the large one, at
each discharge of matter - When no small cloud
is near, a mountain, a tree, or house &c. will attract
this matter - In order to guard our houses against
the bad effects of lightning; we should use Doctor
Franklin's conductors; ^{to carry it silently off the earth:} these are iron rods with one
end in the ground and the other reaching a little
higher than the ^{top of the} chimney; the point is to be sharp
and tipped with brass to prevent its rusting - in England
balls have been placed on the top; but they did not an-
swer the purpose * Lightning is conducted by metals of
every sort; but not by glass - Where

36
Where there is no rod, avoid sitting near a chimney,
door, or window, for these also conduct lightning—
the safest place, is near the middle of the room,
or on a feather bed—
Trees, also, and every other object that may attract
lightning are to be avoided in a thunder storm. The
British in a storm of this kind shun trees &c. as if by
instinct.

may,

1-2

on

at

The

by

The Twelve Signs.

- ♈ Aries, or the Ram.
- ♉ Taurus, the Bull.
- ♊ Gemini, the Twins.
- ♋ Cancer, the Crab.
- ♌ Leo, the Lion.
- ♍ Virgo, the Virgin.
- ♎ Libra, the Balance.
- ♏ Scorpio, the Scorpion.
- ♐ Sagittarius, the Archer.
- ♑ Capricornus, the Goat.
- ♒ Aquarius, the Waterbearer.
- ♓ Pisces, the Fishes.

Multiplication Table.

| | | | | | | | | | | | |
|----|---|---|----|----|----|----|----|----|-----|-----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
| 3 | - | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |
| 4 | - | - | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |
| 5 | - | - | - | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 6 | - | - | - | - | 36 | 42 | 48 | 54 | 60 | 66 | 72 |
| 7 | - | - | - | - | - | 49 | 56 | 63 | 70 | 77 | 84 |
| 8 | - | - | - | - | - | - | 64 | 72 | 80 | 88 | 96 |
| 9 | - | - | - | - | - | - | - | 81 | 90 | 99 | 108 |
| 10 | - | - | - | - | - | - | - | - | 100 | 110 | 120 |
| 11 | - | - | - | - | - | - | - | - | - | 121 | 132 |
| 12 | - | - | - | - | - | - | - | - | - | - | 144 |

Money.

£. s. d. q.

1—10—12—4

Avoirdupois Weight.

T. C. Q. lb. oz. dr.

1—20—4—28—16—16.

Troy Weight.

lb. oz. dwt. gr.

1—12—20—24.

Apothecaries Weight.

lb. oz. dr. scr. gr.

1—12—8—3—20.

Wine Measure.

T. P. H. G. Q. P. G.

1—2—2—6—4—2—4.

Long Measure.

D. M. F. P. Y. F. I. B.

1—60—8—40—5—3—12—3.

360 Degrees are the circumference of the Globe.

Land Measure.

A. R. P. Y.

1—4—40—5

Dry Measure.

B. P. C. P. Q. P.

1—2—2—2—2.

Cloth Measure.

Y. Q. N. In.

1—4—4—4.

Time.

Y. D. H. M. S.

1—365—24—60—60.

Thirty days hath September,

April, June, and November;

February hath twenty-eight* alone,

All the rest have thirty-one.

* Twenty-nine, every 4th or leap year.

Numeration.

| Millions. | Millions. | Thousands. | Thousands. | Hundreds. | Tens. | Units. |
|-----------|-----------|------------|------------|-----------|-------|--------|
| C | X | C | X | T | | |
| 9 | 8 | 7 | 6 | 5 | 4 | 3 |
| 2 | 0 | 5 | 2 | 1 | 4 | 6 |
| 4 | 0 | 2 | 5 | 3 | 0 | 0 |
| 8 | 2 | 0 | 7 | 5 | 3 | |
| 6 | 0 | 0 | 9 | 8 | | |
| 5 | 0 | 0 | 1 | | | |
| 7 | 0 | 0 | | | | |
| 9 | 1 | | | | | |
| 4 | | | | | | |

Pence Table.

| d. | .. | d. |
|-----|-----|------|
| 20 | | 1 8 |
| 30 | | 2 6 |
| 40 | | 3 4 |
| 50 | | 4 2 |
| 60 | | 5 0 |
| 70 | are | 5 10 |
| 80 | | 6 8 |
| 90 | | 7 6 |
| 100 | | 8 4 |
| 110 | | 9 2 |
| 120 | | 10 0 |

Numerical Letters.

I 5 10 50 100 500 1000
I. V. X. L. C. D. M.
MDCCLXXXVII.

BOOK.

Printed for ANDREW BROWN, Principal of the Young Ladies' Academy.

3 FOR THE 3
YOUNG LADIES' ACADEMY,

Y 2

7395

F 14

Near St. Paul's Church, in Third Street, Philadelphia.

HEAR, ye children, the instruction of a father; and attend to know understanding. Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get understanding.—Exalt her, and she shall promote thee; she shall bring thee to honour when thou dost embrace her. She shall give to thine head an ornament of grace; a crown of glory shall she deliver to thee.—PROV. iv. 1, 7, 8, 9.
If sinners entice thee, consent thou not —PROV. i. 12.

To write a free and legible hand, and to understand common arithmetic, are indispensable requisites.—*Mrs. CHAPONE's Letters.*

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a good education is not that they should become dancers, singers, players, or painters: its real object is, to make them good daughters, good wives, good mistresses, good members of society, and good christians.—*Mrs. Chapone's Essays.*

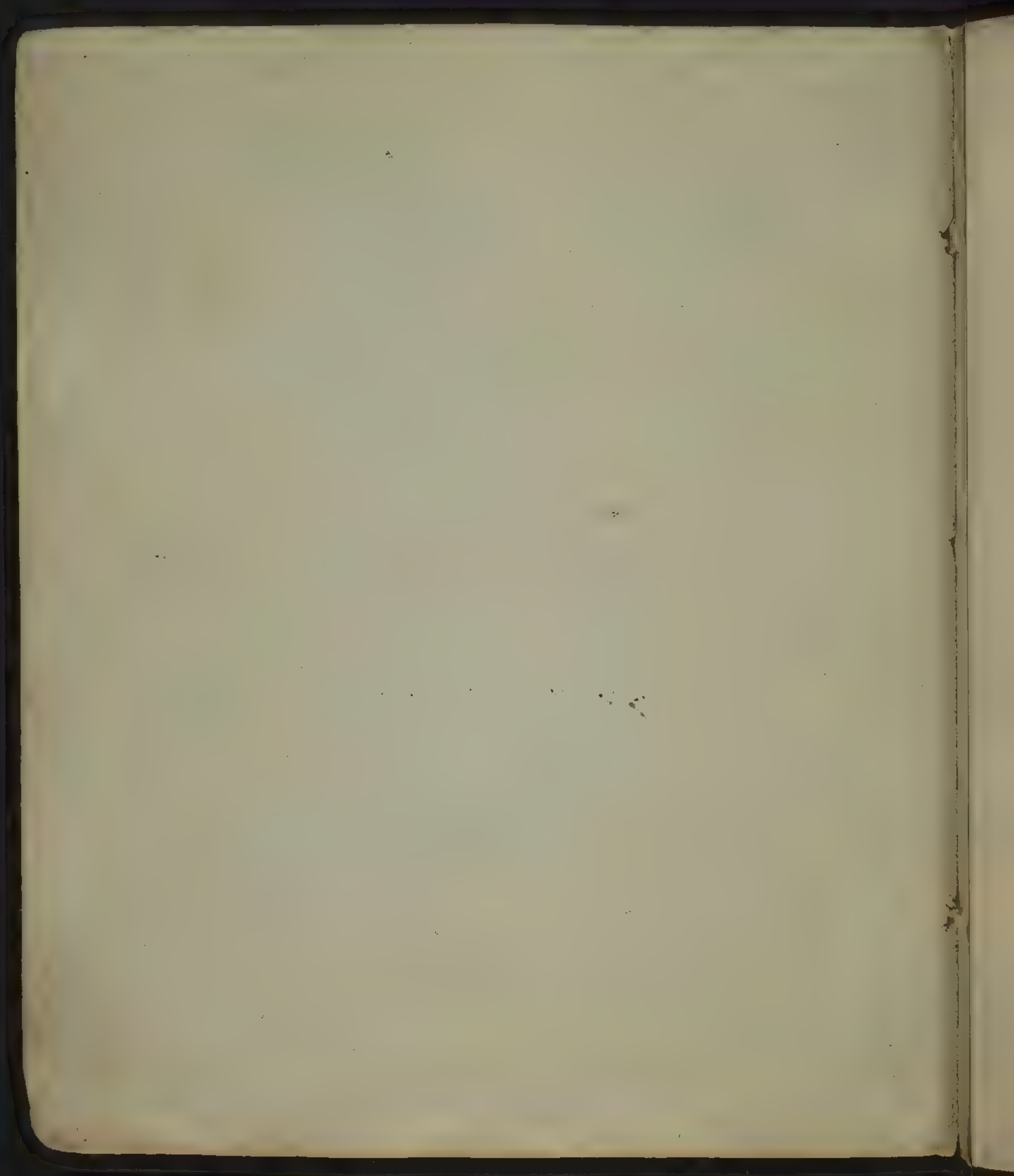
If your endeavours are deficient, it is in vain that you have tutors, books, and all the external apparatus of literary pursuits. You must love learning, if you intend to possess it. In order to love it, you must feel its delights; in order to feel its delights, you must apply to it, however irksome at first, closely, constantly, and for a considerable time.

Pleasant, indeed, are all the paths which lead to polite and elegant literature. Yours, then, is surely a lot peculiarly happy —Value duly the opportunities you enjoy, and which are denied to thousands of your fellow creatures.

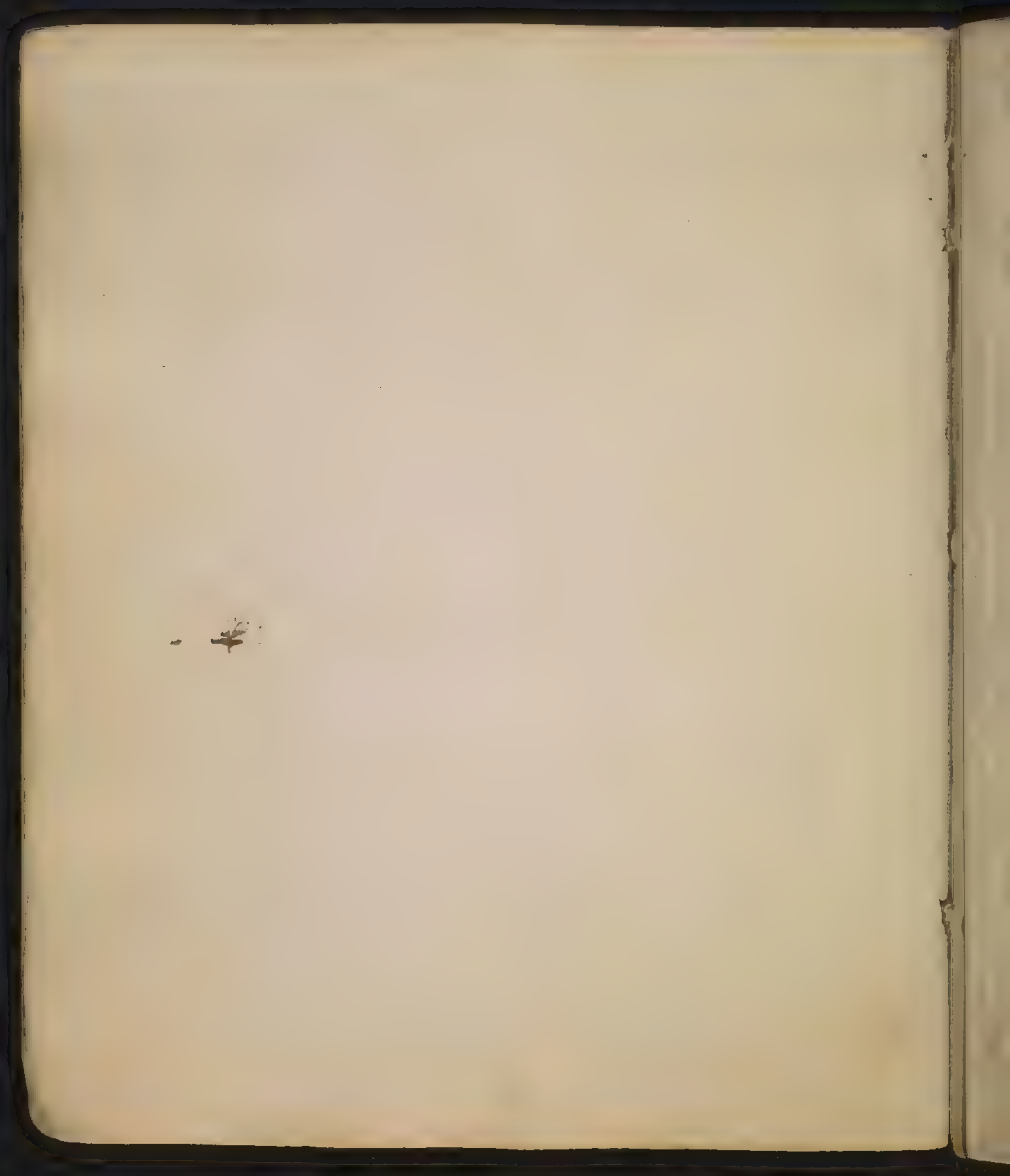
Without exemplary diligence, you will make but a contemptible proficiency. You may pass through the forms of schools—but you will bring nothing away from them of real value. —Your instructor may, indeed, confine you within the walls of a school, a certain number of hours. He may place books before you, and compel you to fix your eyes upon them; but no authority can chain down your mind.

That learning belongs not to the female character, and that the female mind is incapable of a degree of improvement equal to that of the other sex, are narrow and unphilosophical prejudices. The present times exhibit most honourable instances of female learning and genius. The superior advantages of boys' education, are perhaps, the sole reason of their subsequent superiority. Learning is equally attainable, and, I think, equally valuable, for the satisfaction arising from it, to a woman as a man.—*Knox.*





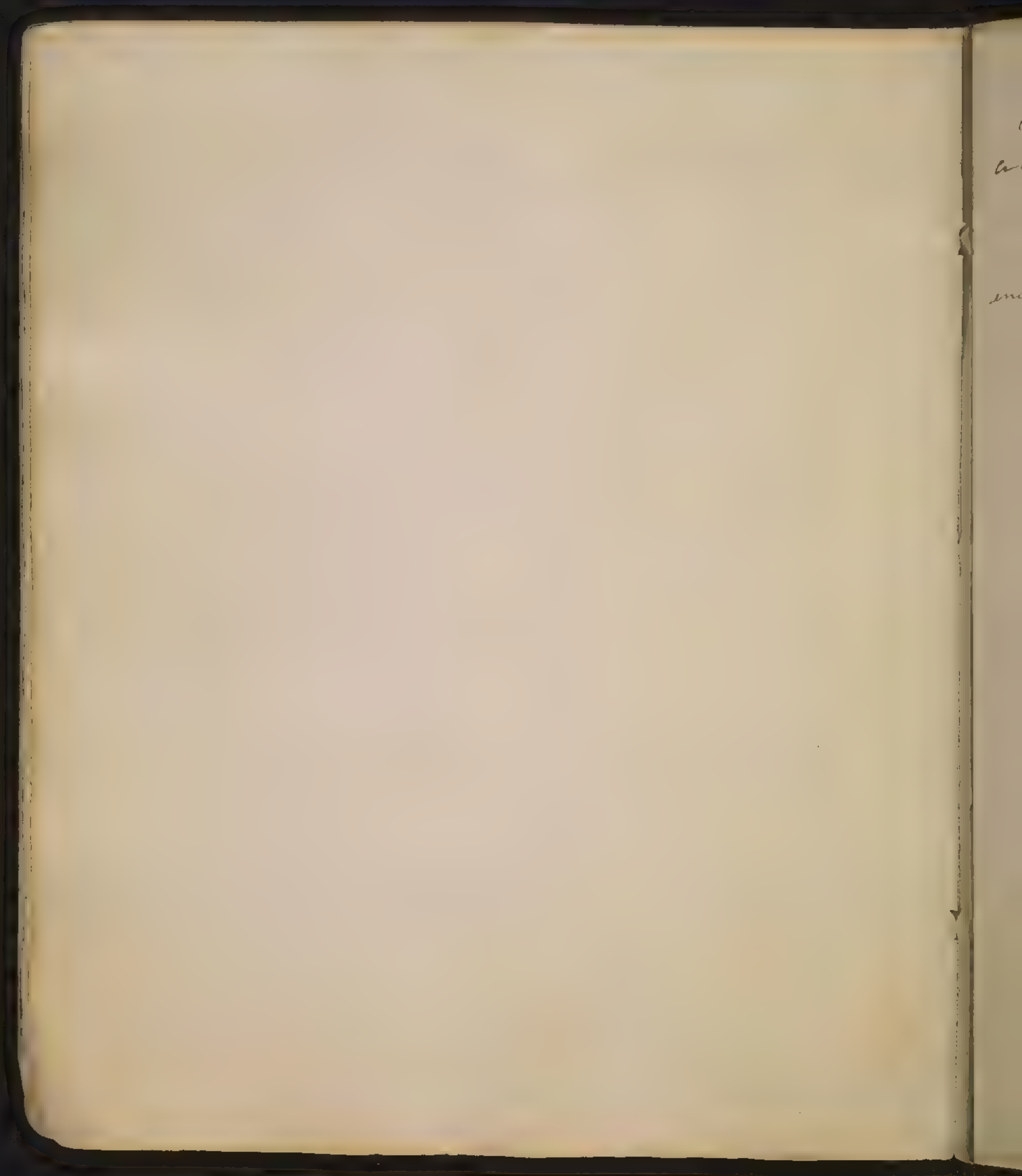




It is to be lamented that kitchens are too often the receptacles of dirt; and, what is worse, of vice. To prevent a communication of both, it has been recommended by some to have the kitchen at a considerable distance from the dwelling house. This, in large families, and in the present state of ~~civilized~~ society, in this country, is impossible. If they are to be kept out of sight and hearing, the best place, in towns, is under ground: if they be under the parlour, some springy body, as ~~padding~~ or straw, may be placed under the parlour floor, to prevent the passage of sound. If they be receptacles of dirt, vice, or ill manners, children should be carefully kept from them; for, vice, in a particular manner, like knowledge is increased by being propagated.

But is there no way of preventing this dirt, or vice? Are our servants to be abandoned to destruction and ruin? — No —

Ans.



[Our servants, to use the words of Lord Chesterfield, are
"our unfortunate friends" — ~~Or, in the words of a~~
~~a highly cultivated~~ ^{to use the words of}
~~servant, our brethren~~ —] There is one, and but one,

method of preventing the disorders of a kitchen — ^{and that is by}
— The presence of a mistress. — The tongue, eyes,

and ears of a mistress in her kitchen ^{are} an effective
remedy for all disorders; It is inconceivable
what good effects would be produced by
a lady visiting her kitchen two or three
times a day — It would promote economy,
and by that means give a wife a complete
influence over her husband; for certain it is,
that a man will love that woman most,
whose affection for himself he feels, every time
he sits down to a meal, or puts his hand
in his pocket. * Attention of this sort will defend
liberal and extensive knowledge from censure; for
among the various illiberal reasons which ^{have}

* See Solomon's character of a virtuous woman — Prov. XXXI. 10.

The principal design of Drap is to defend
us from the inclemencies of the weather.
particularly heat & cold. — I shall
~~+ but in summer & winter~~
~~to~~ briefly mention the means
of Obviating 1st Cold — & 2nd Heat col: 2
p25-

39
have hitherto been given for neglecting the education of ladies, one has been — That a liberal education renders ladies inattentive to domestic duties — How praise worthy then would it be in such ladies to shew, by their conduct, that this remark is not only illiberal, but, also ill-founded — A kitchen should have an oven; it should also have a floor of brick, or stone, to prevent danger from fire — a pump, or well, a milk-house, and a wash house, should likewise be near it — Ice-houses, in which ice &c. may be preserved in the heat of summer, must be deep in the earth, and defended, from the heat, by hay, straw, or some other spongy body.

Of Dress. +

Woollen clothes are liable to be cut by moths in summer — to prevent this — mix some tobacco leaves, cedar shavings, alspice, or camphor, with them — Or, what is a better method

+ Shoes & boots to be dry & warm -
Capt Miles's receipt -

40

pack them in trunks, or chests, and place them in the cellar, the dampness of which will preserve them, or they may be kept safe by wrapping them in linen — Woollen and cotton clothes are most healthy.

it were to be wished that the people of this country would be more careful in changing their light summer dress, for garments of woollen, ~~or cotton~~, at the first change of the weather, in the fall of the year; a numerous train of diseases might be prevented by such precautions.

Linen clothes are not so healthy; being liable, ^{when old, or dirty to produce diseases} to become putrid, with the exhalations from the skin — +

Silk clothes are very durable: when they become old they may be carded and spun over again: hence, there is great economy in using them.

Stains, in clothes

Grease may be taken out of them with chalk and water and a hot iron; this, however, will spoil dark colours — therefore, it is better to use an

The stain of ink may be taken out
+ ~~take~~ by new milk — [Mrs Archer] &c
by dipping the stained part in a piece
melted mottled candle, & then throwing it
into the washing tub. It will come
out clean. go to Sleep p 19. 2

aromatic oil, as spirits of turpentine; by rubbing the stain with this, the grease will be rendered volatile and will evaporate with the turpentine.

Stains of red wine, cherries, &c. may be washed out with Madeira wine; or, by salt, dissolved upon the stain, by the steam of boiling water, from the spout of a ^{tea} kettle.

Iron moulds may be taken out by means of a muriatic acid obtained from common salt. The acid must be ^{well} diluted with water, or it will corrode the linen. + Of furniture.

Plate vessels are the best and most durable; no common acids having any effect upon them: there is great frugality in the use of them, because of their duration; and, if, at any time, we should wish to have vessels differently fashioned, a small sum of money will procure the exchange. Vessels of iron, tin, or copper, when plated, answer very well; besides, we can easily change them as the fashion changes.

Cooksey



42

Copper and brass vessels are acted upon and corroded by acids, syrups, and alkalies - hence they are dangerous, if not tinned - The action of acids upon these produces verdigrise, around that part to which ^{air has} access - hence, the bottom of vessels are less acted upon than that part above the surface of the liquids.

+ Pewter mugs plates &c. are very safe - there is great economy in using pewter plates - they are cheap, not easily broken, nor do they spoil knives, as china, and earthen wares do - I am apt to think that having tried other metals, wares, &c. we will have recourse to pewter once more!

Iron vessels are very durable, and may be used with safety - tho' acids, of every sort, and even water act upon it; yet, no injury arises from it; the tincture being rather wholesome than otherwise. Tea kettles, and pots, of this metal are very fit for use.



23

China ware is made of a flinty ^{fine white clay} earth and called by the Chinese petunee, and kaoli; enamel of melted tin gives it transparency: the painting of this ware in China is chiefly done by children under twelve years of age. This ware is very safe and handsome; there is, however, one objection to it, — that it is easily broken. —

Glass is made of sand and an alkaline salt; to make white glass these must be mixed with a little lead. — In making wine glasses the top is first formed: the curves in the shank are made by putting an enamel on it and twisting it around when soft. — This ware is not acted upon by any solvent in chemistry — not even by aqua fortis, or the vitriolic acid — hence it is used with the utmost safety.

Earthen ware of every sort as delft stone, queen's ware &c. are glazed by a solution of calx of lead in water, which vitrifies the clay. Vessels glazed in

+ Earthen ware - China & glass mended by
Adams & his binder - being boiled in milk will
be together - & by a paste made of the white of an
egg & unslacked lime - also a gluten
obtained from wheat by a process
described by Fourcroy.

44

in this manner are dangerous and not fit for use. for acids dissolve lead and the solution, tho' sweet, is poisonous. In Devonshire, in England, where they make and drink much cyder. the people were for some time afflicted with a violent griping ^{disorder} in their bowels, called the Devonshire cholera; this they at length found was occasioned by drinking the cyder which had ran thro' leaden pipes — +

Looking glasses are rendered capable of reflecting the rays of light, by covering over one side of them with an amalgam of tin foil and mercury.

Pictures are painted upon canvass, wood, glass, or metals — with crayons; or in oil colours; or ⁱⁿ water colours —

Prints —

Busts are made of plaster of Paris, ground, diffused in water, and cast; either at full length, called alto relievo; or, in part — called basso relievo



45

Beds sheets &c. should be well aired daily to discharge perspired matter which is much phlogisticated and exceedingly impure. This will be evident by taking a burning candle between the sheets, any morning, which have been lain in all night; for unless fresh air be admitted the flame will be immediately extinguished.

Washing should be performed with soft water such as rain or river water. It is generally used warm - but some articles are best washed in cold water. Soaps of various kinds are used in this operation of which I shall speak presently.

Bleaching is done by the heat of the sun, a fixed alkali (as potash) and soft water. It might be done by the sun and water; but better with the assistance of the alkali which ^{dissolves and} takes off the vegetable filth &c. from the cloth -

Ironing is done to smooth, or, as it were to polish, the surface of linen &c. This is performed with hot irons: great caution should be observed in putting the hands into cold water, when they are heated by this exercise. There have been instances of some dying in a few hours by this inconsiderate act -

2) Soap is made of oil, or ^{fat}, and an alkali obtained from ashes - This is hardened by common salt which abstracts the moisture, or rather the water of the lye - Castile soap is composed of oil of Olives and a fine fossil alkali.

Starch is obtained from wheat, and sometimes potatoes, fermented for two or three weeks, and then strained and washed.

Blue, which is used to prevent yellowness in clothes, is procured from indigo.

Dyes - By means of these we are enabled to procure beautiful colours, in imitation of the works of nature; they also, preserve many things, like paint.

There are seven original, or primary, colours - violet, indigo, blue, green, yellow, orange, and red - The initial letters of which, to assist the memory, are contained in the words - vib. ind. yell. or. red. - These colours exist not in bodies; but, in the rays of light derived from the sun; and the different bodies appear of their respective colours by reflecting these rays.

& likewise be put on on damp days: on
cold evenings in summer. The great
secret of preserving health from changes in
the weather is to accommodate our dress
to them. — ~~It is~~ — not eaten by insects
— proper for winter & summer — very
wholesome.

Fur & woollens are liable to be moth
eaten. —

At In Canada they preserve their fur cloaths
in their close stores — which are made
of iron. Mr Gibson ~~is~~ used to preserve his
woolens in ^{empty} rum hogs^d in a cellar.

Moths never touches cloath^s made of
vegetables. — does silk & wool — & fur
They may be further preserved by
Tobacco — camphor — Cedar shavings — or
Alspice, or by being wrapped in
linen. — Go to Harris p: 40

47.
The colours of bodies arise from their dispositions to reflect one sort of rays, and to absorb others.

Such bodies as reflect two or more sorts of rays appear of various colours. Hence, the whiteness of bodies arises from their disposition to reflect all the rays of light promiscuously— And, the blackness of bodies proceeds from their incapacity to reflect any of the rays of light— from hence it arises that black bodies, when exposed to the sun, become sooner heated than all others.

Cloathing is made of Wool. ^{Fur} Cotton - linnen & Silk. Wool excellent in variable & moist climates - next to the skin. Cotton not liable to be worn eaten & suits all its seasons. Linnen less wholesome than wool or cotton. Silk wholesome & durable. May be dissolved in a caustic alkali. In this way gold & silver may be obtained from lace.

Woolen cloathes should be laid aside in our climates ⁱⁿ the 1st of June, & put on again on the 1st of September. - They should

+ Bring in Lewis' recipe.

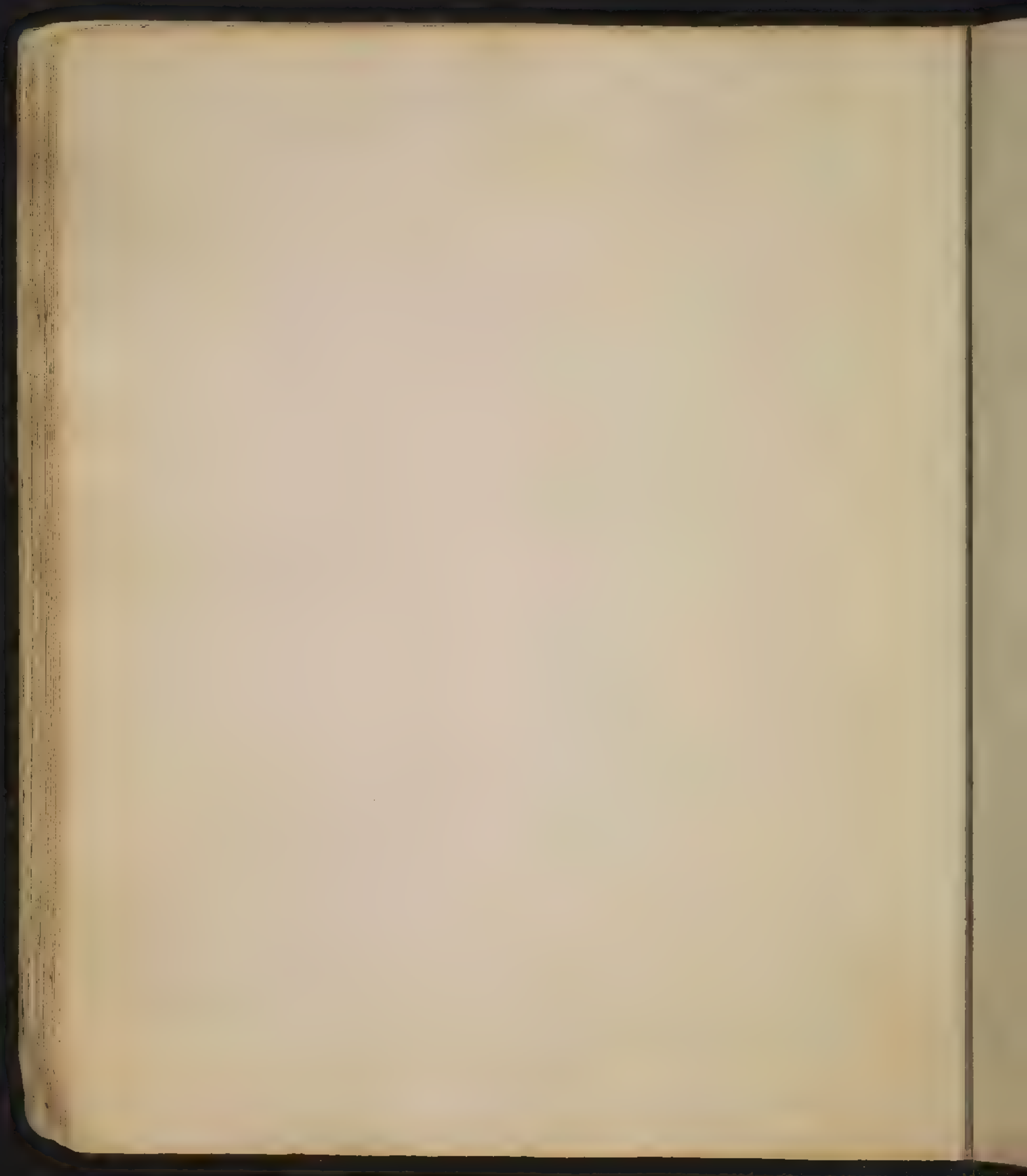
48

Clocks and jacks, with a variety of other engines, are formed by a knowledge of the mechanic powers; which have been happily discovered, to increase the powers of man, and to lessen labor. Clocks & Jacks, move by means of weights, or springs; one sort of jacks perform their motions by means of smoke.

Lamps are of various kinds. The best, now in use, is the new fashioned lamp which consumes its own smoke; and has several plates, which make it to reflect the rays of light better than any other. One of these lamps gives as much light as eight candles.

Candles are made of spermaceti, tallow, bees wax, &c. their wicks of cotton or tow; the best wicks are made by mixing cotton and tow.

Pens - When quills are oily, pens made of them will not let down their ink freely: boiling quills in lye will deprive them of their oil. ^{to be kept in lye or not according as the quill is hard or soft.}
Ink. - black ink is made of an astringent vegetable, as white oak galls, green vitriol and soft water - cloves preserve it; sugar is not fit for ink. - g.



49

In China pigments are used for ink. They
roast and powder rice; this they dissolve in wa-
ter; and write with brushes. Ink generally
gets blacker after it has been written with, by
the evaporation of the water it contains.

Sympathetic ink, which is used in private
correspondences may be obtained by writing
upon paper with a solution of saccharum satur-
ni; this writing, when dry, will disappear;
but will immediately become legible, and of a
brownish black, by holding it near the mouth
of a bottle containing volatile tincture of
sulphur, or Essence of Sulphur - or a solution
of Opium (which is arsenic & sulphur)
in lime water. The phlogiston emitted
from these substances reduces the calx of the
lead, and thus restores to it its natural dark
color.

+ Proper time for studying - Injury of
Night studies from ^{weakened} ~~diminution~~ of thinking -
Air of candles - low ^{and feet} ~~fires~~ - Loss of ex-
-citability -

Liberty from respect and to wholesome?

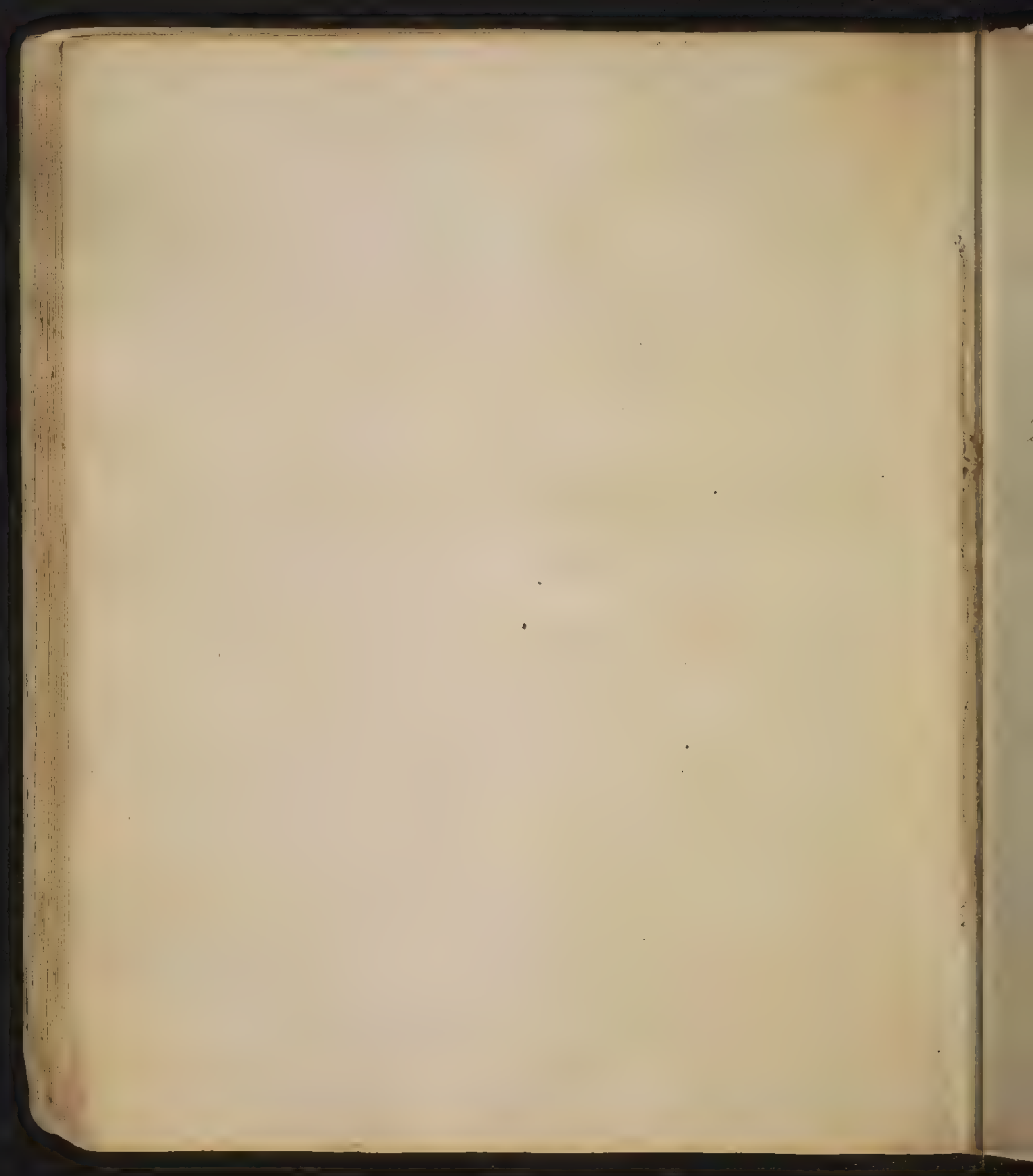
50

Paper, is obtained from rags beaten, & boiled into a pulp. They are then taken out into a machine like a sieve thro' which the water flows leaving the paper behind. This is taken out of the mould or machine, & pressed between flannels till it is dry. It is afterwards sized, or glazed.

Books are composed of a number of sheets of paper bound together - (for the mode observed in printing books, see a printing-office). In reading & writing avoid receiving the light in front - raise the book to prevent the fatigue of the eye - & stand to avoid pain in the breast.

Thermometers are instruments to measure the degrees of heat. When the mercury stands so low as 32° , or under, we have ice; at 62° , or under, fire beyond 80° heat is oppressive. becomes necessary; at 96° , and from that to 100° , the heat of our atmosphere is equal to that of the human body: from 110° to 120° it is feverish.

Barometers serve to shew the gravity of the air, and are, therefore, useful in predicting changes of the weather - in damp weather the air is light; in clear weather it is heavy.



Means of preserving beauty

Beauty depends upon shape, teeth, and complexion.

1. Shape — The line of beauty is an erect posture — tight lacing spoils the shape, and impairs the health. The simplicity of our Quaker ladies' dresses is worthy of imitation.

2. Teeth may be preserved and set in graceful order by employing a dentist for that purpose; nor, can any money be better laid out, than in the preservation of our teeth — it is best to have them nearly touching each other. They ought to be cleansed frequently, in the mornings and after meals with a brush and cold water; so soon as teeth are decayed by the tooth-ach &c. they should be immediately drawn; or they will affect the others by sympathy. Washing the mouth, and behind the ears, every morning with cold water is of ^{great} ~~infinite~~ service to preserve teeth, health, and complexion —

(Decay of the teeth is occasioned by a changeable climate — it is therefore prudent to sleep ^{with}

Just before going to bed is the best time for brushing
the teeth, they then remain perfectly clean for eight or
ten hours, which not only preserves the breath, but
renders the appetite more keen for breakfast, by pre-
venting that disagreeable taste in the mouth, which
is frequently observed in the morning, after having
eaten some particular things, especially cheese.
for supper.



METHOD of Preserving the Beauty of TEETH.

From a Letter of Dr. Mitchell, to ———.

SOME experiments which I have made upon human teeth by calcination and solution, convince me that they contain, particularly in their outer coat, or covering, a large proportion of CALCARIOUS EARTH. This incrustation is secreted by the arteries of the teeth, and regularly deposited all around, to defend them from outward accidents. When it is corroded or worn off, and the naked bone exposed to the operation of air, spittle and aliment, the diseased teeth soon corrupt. While it remains unhurt and entire, they generally continue useful and ornamental. But what avails the knowledge of these facts, unless we gain some *practical advantage* by them? From these facts then, we may learn, that the enamel of the teeth, which is so remote from the influence of blood and nerves as to be nearly allied to inanimate matter, is, like chalk, egg shells and marble, readily acted upon by ACIDS. Whence a sufficient reason appears, why very tart apples occasion, soon after eating them, a sort of soreness or unpleasant sensation in the teeth; why the frequent use of sharp vinegar in pickles and sallads is injurious; why lemon juice and tamarinds are also destructive; why spirit of vitriol is still more ruinous; and why foot and tartar, employed as dentrifices, by the acid they contain are often productive of irreparable mischief — as likewise why young folks who indulge the pernicious habit of chewing allum, damage their teeth excessively. — Hence too, we may further learn, that the best way to prevent their decay and loss, is to wash them frequently with PURE WATER and wipe them clean with a soft towel, and neither *chemically* corrode them with vegetable and mineral acids, nor *mechanically* wear them away by scouring with hard and gritty powders.

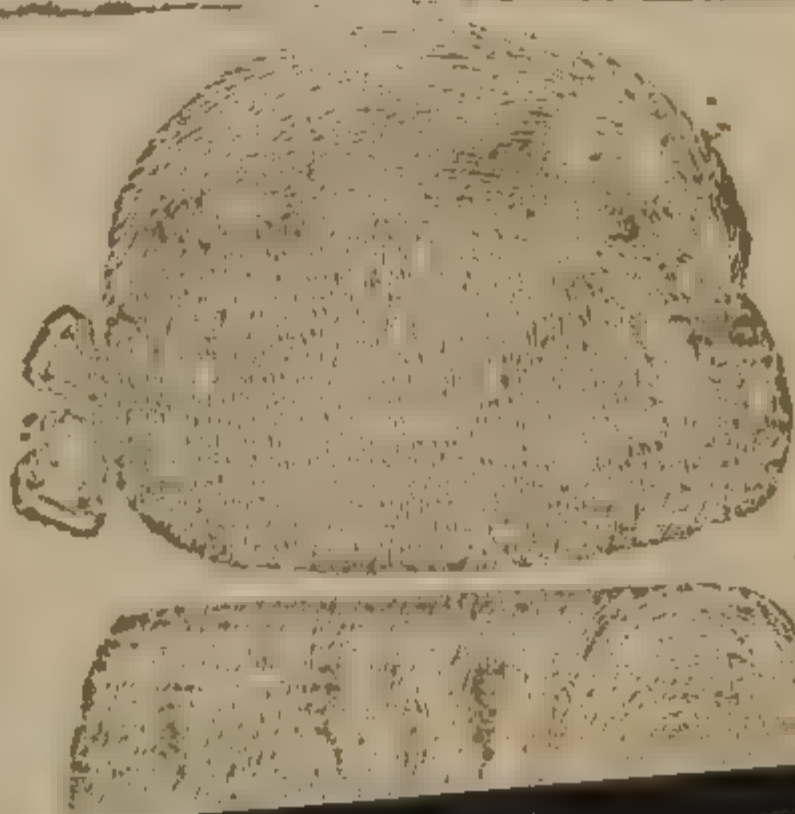
Does it now seem at all wonderful, as people are accustomed to take so many hurtful substances into their mouths, that the teeth suffer detriment thereby? Is it not rather matter of surprise, considering all these things, that many have any teeth left? And is not your question, 'why are bad teeth so common,' in a good measure answered? — So far, therefore, as the present subject extends, the preservation of BEAUTY depends upon a sure and certain principle, easy to be understood and followed. As to that harmony of shape and features in which the remaining part of beauty consists, the pious Mr. Lavater thinks it is inseparably connected with moral excellence; I shall therefore only add, in the sentiment of this most able physiognomist, that "The way to be handsome is to be good."

handkerchiefs, India bandannos, ell-wide perrians, 1-2 yard and 1-2 ell farinets, black modes, sewing silks, black and white lace and edgings, lawns and cambrics, white and coloured threads; a handsome assortment of mens and womens worsted, cotton, and silk hose; 7 8 and yard wide Irish linens; Scotch shirting; bedticks; diaper and tablecloths, buckrams, tapes, pins, needles, &c. &c. &c.

N. B. Flaxseed, Pot. Ash and Bees Wax, bought or taken in payment. mwf

FOR SALE BY
PRAGERS & CO.
HOLLAND GENEVA in pipes
 and jugs

Pest Dutch Madder in large and small casks
 Jesuits Bark, Opium, refined Camphor
 British and Reach Allum
 Dry and ground in oil best English White Lead.
 Pearl Barley
 Claret, Hermitage, and Rhine Wine in bottles
 German Scythes, and Maryland whet stones
 Ironmongery and Hardware
 China and Delf ware
 Superfine and coarse Broadcloths, different colours
 Coatings, Duills and Bearskins
 Spotted and striped Ververets
 Checks, cotton and linen, 7 8, 8 8, and 11-8
 Ditto furniture
 Flanders bed Tick, 9 4 and 10-4
 Red Bunts, 7-4 and 8 4
 Coarse and fine mens, boys, and girls' Hats
 Hutter's Trimmings assorted
 Tucklenbergs, Olmabrigs, Heilens
 Platillas Royal, Dowlasses
 Fine Flanders Linen and Sheetings
 India Tasseties and coloured Lutestrings
 Bandano, Barcelona, Romal, silk and cotton handkerchiefs
 Blond Laces and Gauzes
 British Sail Duck, No. 1 to 6
 Writing Paper of different sizes, Sealing Wax, &c.
 ALSO—A fresh and general assortment of BOULTING CLOTHS, and a few pipes, hogheads, and quartercasks of London particular Madeira WINE.
 December 10. w&itf



3) with the head warm: this is not only serviceable to our teeth, but also preserves the sight, and the hearing. Here be full on the treatment of the teeth.

3. Complexion — A beautiful complexion depends upon an agreeable mixture of white and red. The sun injures all complexions; very fair complexions, however, repel his rays, and receive very little injury from them: on the contrary, the darker the complexion, the sooner a dye takes place. — The complexions of the ladies in Great Britain and Ireland are remarkable for an agreeable mixture of white & red owing to the moisture of their atmosphere in that temperate climate. — Frequent washing in this country is an excellent substitute for their moisture; it is also good for health. Washing dissolves, and prevents the collection of, exsudations on the human body. Pure water, as rain, or snow water, is the best for this purpose: of this the ancients seem to have been well informed — hence Job IX. 30. "If I wash my

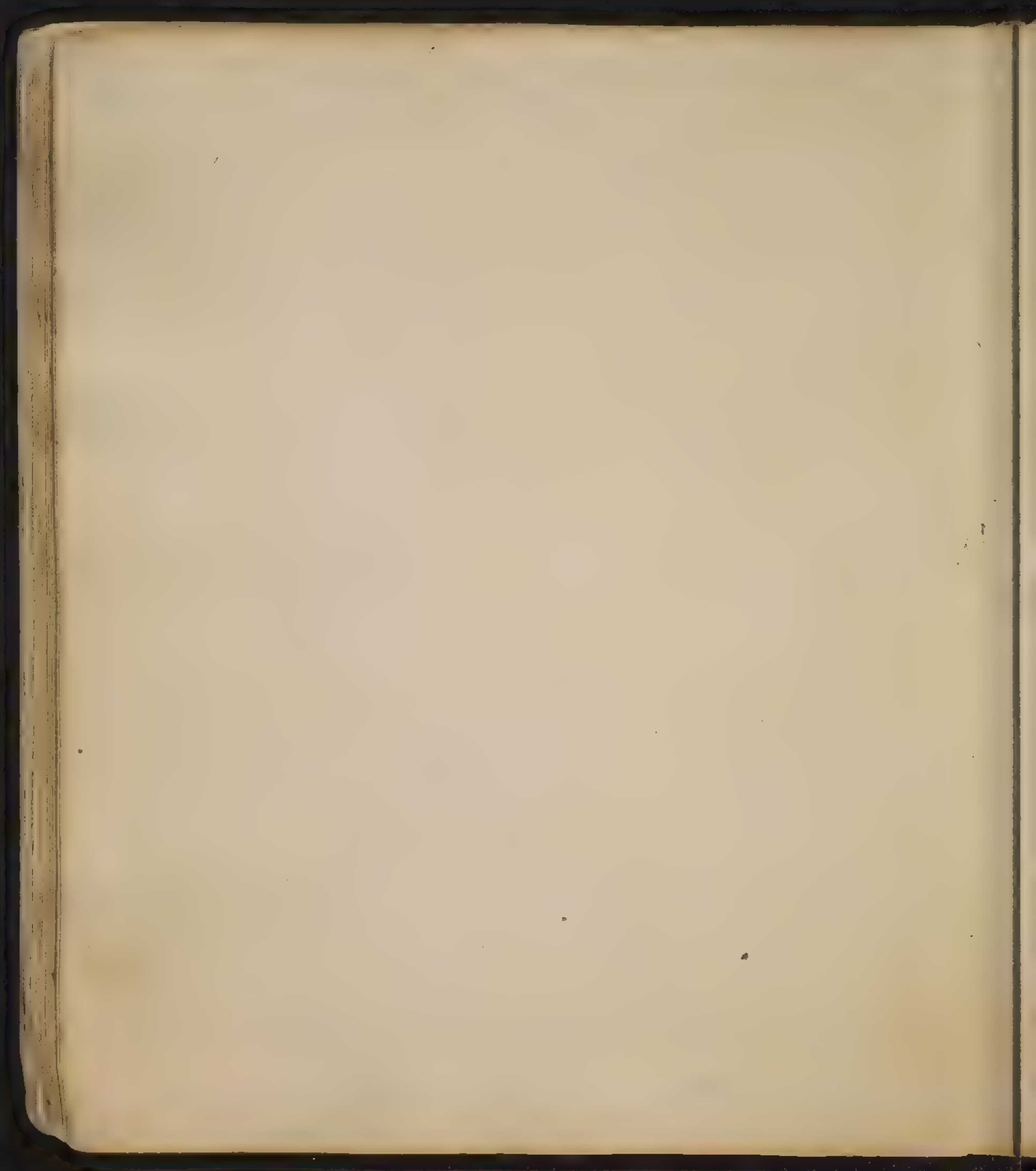
+ Indian Meal & weak lye - an excellent

* wash - a brown complexion tans

much sooner ^{""} than a fair woman

"myself with snow water, and make my hands
"never so clean". +

4. Good health is essential to beauty; also, to our pleasure, and happiness; while in this world: therefore, we should ^{be} carefully ^{to} preserve it. This depends 1st upon moderate exercise; the best exercise, in good weather, is walking, in a pure, and open air - 2^d. Early rising, the morning air, air of hills, and country air, are very pure; and contribute much to health, and beauty; for pure air gives a fresh complexion, and communicates redness to the blood ^{as among the} (* Scotch ladies). 3^d. Late evening parties should be carefully avoided; Few, who have followed this practice, have been blessed with health, or longevity. Such people not only imbibe noxious, and impure, air at a late hour; but they also spend their mornings in sleep; and lose the pure air which they might then breathe. The ~~cause~~ ^{folly}, of thus inverting the order of nature, by changing night into day, and day into night, generally has its punishment inseparably connected with it. -



4. We should eat moderately of animal food; and that not too highly seasoned; it gives an immoderate degree of ~~whiteness~~ redness and, indeed, a very disagreeable sort of red, attended with pimples.

5. Heavy, and cumbersome, head-dresses injure the health; and, consequently, are prejudicial to beauty.

6th But, above all, avoid cosmetics, and perfumes. Cosmetics, being composed of metalline substances, produce nervous diseases; they also give a yellow tinge to the complexion; so that if a lady be so imprudent as to use them for a while, she can never lay them aside during life. This, then, being the case, I trust the ladies of America will never sacrifice their health, and native beauty, to the use of such ^{artificial ornaments} ~~borrowed feathers~~ (if I may use the expression) like the ~~Asian~~ ^{Asian} ~~fact-daw~~; But that they will rather be ambitious, like the meridian sun, to shine forth with unborrowed lustre — as to perfumes, they are poor substitutes for cleanliness; no perfumes can possibly be wanted, unless to counteract disagreeable smells; cleanliness will prevent these



And, to me an Irishman, the best smell is —
no smell at all.

Having shown how ^{personal} beauty depends upon shape,
teeth, complexion, and health, we come next to
consider what dependence it has upon the beauties
of the mind — It will be sufficient to observe,
that without these a lady can no more command
respect, or esteem, than a statue can vie with
a rational being. Therefore,

5. ^{you} ~~He~~ should preserve innocence — purity of mind —
and good humour; but above all ^{you} ~~we~~ should
store your minds with useful knowledge.

Ignorance has been called the curse of God —
it gives a vacant eye and face —

"Beauties of soul irradiate all between
"The body charms — because the soul is seen."

41

+ General Observations - 1 Dr Fothergill's
Story of Lord maclesfield? 2 qualified by
Dr Cullen of many things unwholesome
not immediately so 3 Dyspepsia - diff:
in diff^r persons - ^{from Indigestion} diff^r periods of life & the
first coming in of particular Aliments - as
fish - Vegetables &c.

Animal Matter - supplied by
Sugar and
Acid - Oil. -

The less we drink at our meals the better.
Hippocrates. & Dr Wilson's advice. - No wine till
after dinner. It weakens the appetite
prematurely. Carving improper

1 disagreeable sight to see whole animals
in the shape in which they pleased us when
alive. 2 Is fatiguing during want of ex-
citability - 3 Disturbs table & creates spoils
Dishes & deprives 3 or 4 persons of dinner, or

41
Lecture 11th

Of aliments +

We shall begin by enquiring into the final cause or reason of the frequent returns of appetite. —

Why should so much time be employed in this animal gratification? Why were we not so formed as that one plentiful meal should be sufficient to support our bodies for a week — a month — or even a year?

Two reasons may, probably, be given why this is not the case; and why we are so dependant upon the elements that support our bodies as to require two or three meals a day for our nourishment.

1st It is essential to our happiness that we should retain a constant sense of our Creator upon our minds. To preserve this sense, at all times, our maker has kindly rendered us dependant upon his bounty, and has, by the regular and daily returns of our appetites, implanted a monitor in our bodies to prevent our forgetting him, and

manus if ^m eat them too quickly.

Health is improper. Nothing of its folly -
By obliging people to swallow while they
speak hurriedly - Silence best in eating.
Keeps modest persons from drinking -
Fasts - Remarks on

and to remind us of the obligations of gratitude, and obedience which we owe to his goodness. —

The language of Providence, then, in every meal to which we sit down, is — "When this you see
"Remember me"

2. A second use in the frequent returns of our appetites is, they serve to promote conversation, and thereby, increase knowledge, and social happiness by bringing the members of a family — friends — and even strangers, frequently together, for the necessary purposes of eating, and drinking.

I cannot help remarking a further instance of the divine goodness in connecting so much pleasure with the employments of eating and drinking. Had this gratification been left to reason or to instruction, how often would pleasure, business, or indolence have rendered us dead to the necessities of our bodies! and how often would a perverse temper in a child have been the cause of its death! for, if this child was not impelled to eat by the pleasure it derived from eating, it would be as difficult to com-



compel it to eat, as it ^{sometimes} is to make it learn its books.

There is the same relation between different aliments that there is between the notes of music, some agreeing and some disagreeing with each other. — The perfection of cooking consists in finding out these relations. — I am disposed to believe the science of cooking is still in its infancy and will remain so till it is rescued from the hands of practical cooks, and made the subject of philosophical experiments, and investigation. I believe there are pleasures to be enjoyed in eating — and that there are degrees of health, and long life, to be derived from the proper, and harmonious, mixture of aliments, that we are yet strangers to. Perhaps discoveries upon this subject may be reserved for some of the female philosophers of this new world.

I shall briefly explain what I mean by the harmony of aliments, by a few examples. —
Bread, and meat, are related, and form a harmony

when mixed together. Bread, and milk;— bread, and butter;— meat, and salt;— satted, and fresh meat;— mustard, and cold beef;— cabbage, and vinegar;— mutton, and turnips;— venison, and currant jelly;— pork, and apple sauce;— are alike related to each other, alike grateful to the taste, and alike healthy, when taken into the stomach.

Let us next mention a few instances of discord, or, the want of harmony, in aliments.

Fish, and flesh, when mixed together;— bread and pudding;— salt, and sugar;— meat, and sweet sauce;— butter, and onion;— milk and fish;— are all contrary to each other, and disagreeable to the taste; and if they do not offend the stomach it is owing to its peculiar strength, and healthful state.

The same observations apply to drinks. There is the same harmony, and discord, in them, when properly or improperly mixed together.

I shall add one, or two, remarks upon this subject—



1st The taste, when pure, is an infallible mark of what is healthy in aliments. It is true, the stomach often receives, without rebelling, aliments that are not grateful to the taste: but, this is owing to its peculiar strength. The taste, and the stomach are naturally in union with each other, and, tho' the stomach may forbear long, yet it sooner or later accords with the decisions of taste: thus, fish and flesh are unpleasant when mixed together in the mouth; yet, they may be taken, in succession, with impunity. This is owing to the stomach's not giving an alarm, like the taste, upon the first violence being offered to it. But, attend to the consequences — Persons who have long mixed fish and flesh together in their stomachs cannot digest them — hence, we find, when they eat fish, they prefer eating nothing after it.

2. How shall we account for so many ^{old} people ⁱⁿ

in high life in all countries? we read of noble men of 70,—80, and even 90, years of age; who fare sumptuously every day, and yet feel no inconvenience from it. — I ascribe their health, and long life, entirely to their living upon the best of food, mixed in such a manner as to form a perfect harmony, to the taste, and in the stomach. It is this agreeable and harmonious mixture of aliments that enables some persons to eat such large, and frequent, meals, without much, or any, inconvenience. And it is the want of this harmony, or proper mixture, I suppose, that makes even the most wholesome aliments, taken in the most moderate quantities, produce diseases in many people. The Germans, in this state, are much afflicted with stomach complaints, owing to their aliments not being in quality, quantity, or mixture proportioned to their constant labour—

(a) as to the time of eating much has been said by different Authors. If it be admitted that only one meal of animal food should be eaten in the day, the evening is certainly the best time for taking it.

Rest after a full meal promotes Digestion.

- ~~The~~ Between the hours of is the best,

as it favours respiration afterwards.

~~Deep~~ Sleep is proper after eating provided it is not taken in a horizontal, but in

a sitting posture. The Portuguese custom

is a good one. They ~~recline~~ sit on the floor

after dinner ~~to~~ with their backs ^{to} ag: a

wall, & support their arms with a chair on each side of them. Where

a hearty supper is taken, no meat sh^d. be
ate at dinner.

3. Harmonious mixtures are useful - vegetables, of every kind which are eatable, perfectly harmonize with each other; and by blunting the appetite prevent the eating of an excess of meat —

(cc)

Of fermentation.

Fermentation is an intestine motion between dissimilar bodies; or dissimilar elements. All animal, and vegetable bodies undergo it. There are three stages in fermentation — 1st the vinous, as wine, or as beer in its first stage, when it is fit for use —
2. the acetous, as vinegar — and, 3. the putrefactive, when it has become putrid —

The following circumstances are necessary to favour fermentation.

1. Heat — from 70 to 100 degrees; a greater heat than this promotes fermentation too rapidly, and hurries on to the putrefactive stage.
2. Moisture. — Sugar never ferments unless assisted by water or some other liquid —

3. Access of air is necessary —

4. Rest - agitation hurries on too rapidly to the acetous, or putrefactive stages. — and,

5. Ferments, in some cases are necessary to hasten it — hence, yeast is used in baking &c.

We shall apply these ^{principles} as we go along. —

Of animal food

It has been warmly contested by some that nature never designed man to feed upon animal food. This doctrine has been supported by many ingenious arguments — But that animals were designed for our use is evident, for the following reasons —

1. The declaration of almighty God in sundry parts of the scriptures — that they were for the use of man.

2. Our teeth are not constructed ^{entirely} similar either to those of the granivorous, ~~herbivorous~~, or carnivorous animals; but, are a mixture of the ~~three~~ ^{two}, hence it is plainly the will of god that we should ^{eat}

the number or nature of the powers of the mind
that are suspended by Sleep. Persons who labour,
or who go to bed after being much fatigued
seldom dream. A full meal - an indolent
life - indisposition - or the application of a
stimulus to any kind to ^{the body} ~~any of the senses~~ - such
whether it be hunger - thirst - heat - cold -

light or sound, generally occasion dreaming.

It is, ^{chiefly} from the action of light
~~Sound and Dream~~ & sound upon the
^{principally}

senses that we dream most in the mornings.

- If dreams depend upon natural causes,
the supposition of their being ^{intended} ~~intended~~ to admonish
~~and to explain~~ ^{us} ~~us~~ ^{of} ~~of~~ ^{future} ~~future~~ ^{events} ~~events~~

or of future events must be highly un-

philosophical. To be ~~affected~~ ^{influenced} ~~by~~ ^{by} ~~them~~ ^{by} ~~in~~ ⁱⁿ

^{therefore} influenced by them in any degree in ~~any~~

our opinions or actions is a mark of a

weak mind, or a vulgar education.

"Blindness to the future" was "wisely given"

"That each ^{might} ~~may~~ fill the circle marked by heaven.

I grant that a connection is sometimes perceptible

eat a mixture of vegetable and animal food.

3. Experience shows that this mixture is the most wholesome food for man; for to feed entirely upon either, would soon produce sickness, or

5 By killing animals, we create a
debility. Animal life - if this were not done - the
world would not hold them all. - +

4. If man had been, by nature, designed not to be carnivorous, there would doubtless have been found, somewhere upon the globe, people who do not feed on flesh; which is not the case. —

Every animal ^{has been} used, as food, at some time or place — Wild meats are most easy of digestion for being killed in the chase, and killed without depriving them of their blood; they tend speedily to putrefaction — hence they don't bear long keeping — The inhuman practices of bull-baiting, and throwing at cocks, have been invented, to procure substitutes for wild flesh. — Legs of quadrupeds, and wings of wild birds, from being most used, are hardest of digestion.

+ Besides many animals eat animals Do
only 2 agreeable to creator.

between dreams & ^{subsequent} ~~future~~ events - but by
no means so often as between subsequent
events, and our waking thoughts ^{and these} ~~the subjects~~
less certainly cannot be ascribed to a super-
natural influence upon our minds. In all
those cases where a connection happens
between our dreams & events, it must be
ascribed to what has been very properly
called accidental coincidence.

of animal food from fullness.
& carotid
Small animals easier digested than ^{small} ~~large~~.
young more soluble ⁱⁿ old - except in weak stomachs
where there is a tendency to acrimony, & albuminous
aliment is req^d. ^{fleshy or} fat meat easier ⁱⁿ lean - kept
meat ⁱⁿ fresh killed - Hunted or exercised animals
easier digested. Old animals ^{the} young flesh put on
them digested ^{easier}, & perspire easier ⁱⁿ young animals being
more saline. Animal food more nourishing ⁱⁿ ~~than~~
Vegetable - produces plethora & obesity & irritability.
Sleepiness after eating from energy of brain
being directed to heart & stomach. The legs

Domestic, or tame, animals, being deprived of their blood are less savoury, and harder to be digested than wild ones; grain with exercise is necessary to ^{improve} fatten them; confinement helps to fatten them, but moderate exercise diffuses the fat. They bear keeping, and are made tender by it - but, are much more tender if killed by electricity. Legs of tame fowls are less easy of digestion, than wings, because more used. Ducks, geese, and pigs, should be eaten soon; otherwise they are apt to become rancid by means of the great quantity of oil they contain. Young animals abound with mircillage and are therefore ^{less} ~~sooner~~ ^{less} ~~digested~~ ^{stimulated} than ^{old} ~~young~~ ones. Beef and mutton, however, are ~~exceptions~~ to this rule, and are more easy of digestion than veal or lamb: but they must not be too old - beef and mutton are best from 5 to 7 years old. Madame Parconville's history of putrefaction shows that beef and mutton putrefy ^{sooner}.

we eat +

Animal food, the better -

Or - ~~most~~ nourishing - Sheep next Lambs
most nourishing that have suckled 6 months.
The lean of fat meats most nourishing -
- Hog nourishing from its fat - pigs lip, from
lip fat - ^{shd. not be kept too long.} White meats less alkaline & red - the
last most blood. - Chickens best 1 year old - a white
meat - ~~been~~ more soluble y. Cook. Capon & pou-
- Card. best - crammed fowl rapid & tender -

Pheasant tough - partridge & quail easy of digestion -
Geese & Ducks - alkaline - should not be kept too
long. Animals ⁱⁿ the fly have tough breasts & wings
& tender legs & vice versa. - young pigeons very
alkalescent & tender - eggs wholesome - small
quantity satisfies & nourishes -

+ Fish - Cullen

not the same difference between young & old
as quadrupeds - less perspirable y. meat, but
perhaps equally nourishing - may weaken y.
body by checking appetite from sameness -
Crabs & lobsters like lean fish - not so nourish.
as fat fish. Go to Conclusion. + last p. but two

61
sooner than veal, or lamb - and consequently
are more easy of digestion: the former from
greater strength of stomach, teeth &c. are more
completely animalized than the latter, which
cannot sufficiently chew, nor digest, their vege-
table food: and, therefore, ^{they} retain so much of
the ^{matter} ~~essence~~ of these vegetables, in their blood, as
prevents a speedy putrefaction - see the last
page

+ Fish are supposed, by some, to have been the first
food of Adam after his expulsion from the
garden of Eden; which he might probably, ^{have} obtained
from the rivers ^{near the garden} ~~Euphrates~~ more easily than he
could ^{have} caught any of the beasts of the field which
shunned his presence.

Fish soon become rancid; they should, therefore,
be eaten soon after they have been taken out
of the water: they are a solid food, and require
good health to use them - Pepper, vinegar &c
are necessary with this aliment to promote di-
gestion - hence the Africans, are all fond of ^{fish}

high seasoning with it - Butter harmonizes
well with fish - it is also prudent to drink a little
^{wines,} brandy, or other spirit, after a meal of it - hence
the proverb of fish swimming three times - first
in water - second in butter - and, third in wine.

In order to prepare a fish properly much de-
pends upon boiling it sufficiently, but not too
much - It floats when boiled, and again
sinks when boiled too much. - Mr Henry
of Lancaster restored a fish beginning to be
putrid by keeping it 12 hours in a well of
limestone water - covered with the water.

A corn pudding

Twelve ears grated fine cream $\frac{1}{2}$ lb or butter $\frac{1}{2}$ lb
or milk $\frac{1}{2}$ lb & Butter $\frac{1}{2}$ lb - baked $\frac{1}{2}$ an hour
in a dish ^{the covering of the} ~~the~~ corn to be placed under & around the
pudding except in one place.

1. Whence is heat derived?
2. Is it lodged in all bodies?
3. Does heat ascend or descend?
4. How do you prove it?
5. Does heat contract or expand all bodies?
6. How do you prove that there is heat in snow?
7. How do you prove heat to be in ice?
8. Where is fire necessary in our apartments?
9. Which is the best method of extinguishing fire in chimneys?
10. How do you prevent ^{the increase of} the murrain?
11. Which is the most effectual method of destroying bugs?
12. How do you preserve washed clothes from mottos in summer?
13. How are ^{the} stains of red wine & cherries &c taken out of linen?

14. Can you tell when fish are boiled sufficiently?
15. How do you preserve eggs?
16. How are herbs preserved?
17. Is tea wholesome?
18. What do you think of coffee?

++ Oysters - best raw & fresh - very
slow & difficult of perspiration - hence nourish
most.

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Recommend the
use of liq: Land: instead of
Spirits in families.

Remarks on Dinners - 1 cold rooms - Canada -
2 Saithen & China plates
- pewter best -
3 carving - 4 healths
5 Silence - food eats best
& best chewed. - the
less we drink with
our dinners the better.

Hard to tell w: is wholesome & w: not. - Stomach
like conscience sleeps under violence - & impro-
per Alim^t often does not produce its bad effects
for years - Moderation in quantity a good
rule.

13 - Mrs - Da - p - r

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and

The Twelve Signs.

- ♈ *Aries*, or the Ram.
- ♉ *Taurus*, the Bull.
- ♊ *Gemini*, the Twins.
- ♋ *Cancer*, the Crab.
- ♌ *Leo*, the Lion.
- ♍ *Virgo*, the Virgin.
- ♎ *Libra*, the Balance.
- ♏ *Scorpio*, the Scorpion.
- ♐ *Sagittarius*, the Archer.
- ♑ *Capricornus*, the Goat.
- ♒ *Aquarius*, the Waterbearer.
- ♓ *Pisces*, the Fishes.

Multiplication Table.

| | | | | | | | | | | | |
|----|---|---|----|----|----|----|----|----|-----|-----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
| 3 | - | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |
| 4 | - | - | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |
| 5 | - | - | - | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 6 | - | - | - | - | 36 | 42 | 48 | 54 | 60 | 66 | 72 |
| 7 | - | - | - | - | - | 49 | 56 | 63 | 70 | 77 | 84 |
| 8 | - | - | - | - | - | - | 64 | 72 | 80 | 88 | 96 |
| 9 | - | - | - | - | - | - | - | 81 | 90 | 99 | 108 |
| 10 | - | - | - | - | - | - | - | - | 100 | 110 | 120 |
| 11 | - | - | - | - | - | - | - | - | - | 121 | 132 |
| 12 | - | - | - | - | - | - | - | - | - | - | 144 |

Money.

f. s. d. q.

1—20—12—4

Avoirdupois Weight.

T. C. Q. lb. oz. dr.

1—20—4—28—16—16.

Troy Weight.

lb. oz. dwt. gr.

1—12—20—24.

Apothecaries Weight.

lb. oz. dr. scr. gr.

1—12—8—3—20.

Wine Measure.

T. P. H. G. Q. P. G.

1—2—2—63—4—2—4.

Long Measure.

D. M. F. P. Y. F. I. B.

1—60—8—40—5—12—3.

360 Degrees are the circumference of the Globe.

Land Measure.

A. R. P. Y.

1—4—40—54.

Dry Measure.

B. P. G. P. Q. P.

1—4—3—2—2.

Cloth Measure.

Y. Q. N. In.

1—4—4—14.

Time.

Y. D. H. M. S.

1—365—24—60—60.

Thirty days hath September,
April, June, and November;
February hath twenty-eight* alone,
All the rest have thirty-one.

* Twenty-nine, every 4th or leap year.

Numeration.

| C Millions. | X Millions. | C Thousands. | X Thousands. | Hundreds. | Tens. | Units. |
|-------------|-------------|--------------|--------------|-----------|-------|--------|
| 9 | 8 | 7 | 0 | 5 | 4 | 3 |
| 3 | 0 | 5 | 2 | 1 | 4 | 6 |
| 2 | 0 | 4 | 6 | 8 | 0 | 9 |
| 4 | 0 | 2 | 5 | 3 | 0 | 0 |
| 8 | 2 | 0 | 7 | 5 | 3 | |
| 6 | 0 | 0 | 9 | 8 | | |
| 5 | 0 | 0 | 1 | | | |
| 7 | 0 | 0 | | | | |
| 9 | 1 | | | | | |
| 4 | | | | | | |

Pence Table.

| d. | s. | d. |
|-----|----|----|
| 20 | 1 | 8 |
| 30 | 2 | 6 |
| 40 | 3 | 4 |
| 50 | 4 | 2 |
| 60 | 5 | 0 |
| 70 | 5 | 10 |
| 80 | 6 | 8 |
| 90 | 7 | 6 |
| 100 | 8 | 4 |
| 110 | 9 | 2 |
| 120 | 10 | 0 |

Numerical Letters.

1 5 10 50 100 500 1000
I. V. X. L. C. D. M.
MDCCCLXXXVII.

BOOK

Printed for ANDREW BROWN, Principal of the Young Ladies' Academy.